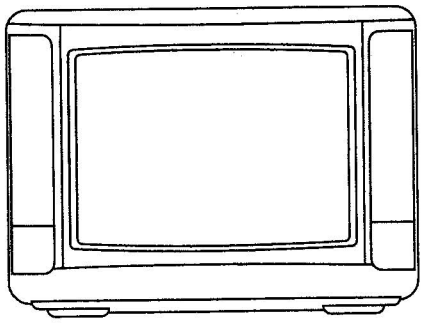
aiwa

aiwa SERVICE

TV-A215

SERVICE MANUAL



COLOR TELEVISION

• TYPE: KEJ

SPECIFICATIONS

Category
Color television
Broadcasting color system
PAL (B/G, D/K), SECAM (B/G, D/K, K1)
Television color system (Video input)
PAL, SECAM, NTSC3.58, NTSC4.43, PAL60
Receivable channel

BAND	CHANNEL
VHF	E2- E12 (WEST EUROPE)
	R1-R12 (EAST EUROPE)
	1-9 (IVORY COAST)
	S1-S20 (OSCAR CABLE CH)
	S21-S23 (HYPER CABLE CH)
UHF	E21-E69 (EUROPE)
	S24-S41 (HYPER CABLE CH)

Aerial Input
75 ohms, unbalanced
Picture Tube
21"
Screen size
460(W) x 508(D) x 305(H)mm
(16 x 20 x $12^{1}/_{8}$ in.)
Video Input/Output
1 Vp-p, 75 ohms

Audio Input
0.5 Vrms., 33 kohms more
Audio Output
0.5 Vrms., 2.2 kohms less
Speaker
103 x 45 mm ($4^{1}/_{8}$ x $11^{3}/_{16}$ in.) oval
Operating Voltage
100 – 240 VAC, 50/60 Hz
Power Consumption
TV-215: 95W
Headphone jack
Stereo-mini jack
Operating temperature
5°C – 40°C
Operating humidity
35% – 80%
Dimensions
580(W) x 491(D) x 425(H)mm
($22^{7}/_{8}$ x $19^{3}/_{8}$ x $16^{3}/_{4}$ in.)
Weight
22 kg (48.4 lbs.)

• Design and specifications are subject to change without notice.

S/M Code No. 09-974-182-4FP

To make the best use of this equipment, make sure to obey the following items when repairing (or mending).

1. Do not damage or melt the tunicate of the leading wire on the AC1 side, including the power supply code.
2. Do not soil or stain the letters on the spec. inscription plates, notice labels, fuse labels, etc.
3. When repairing the part extracted from the conducted side of the board pattern, fix it firmly with applying bond to the pattern and the part.
4. Restore the following items after repairing.

1) Conditions of soldering of the wires (especially, the distance on the AC1 side).
2) Conditions of wiring, bundling of wires, etc.
3) Types of the wries.
4) Attachment conditions of all types of the insulation.

5. After repairing, always measure the insulation resistance and perform the voltage-withstand test (See Fig-1).

1) The insulation resistance must be 7.0 to 9.5 MΩ when applying 500V per sevond.
2) In the voltage withstand test, apply 3.6 KV for 3 seconds and check that the GO lamp lights.

* Breaking current set to 5 mA.
* Connect the safety checker as shown in Fig-1, then measure the resistance and perform the test.
* Do not touch the equipment during testing.
* For details of the safety checker, refer to the supplied Operation manual.

Insulation resistance: 7.0 to 9.5 MΩ (500 V/s)
Voltage-withstand: 3.6 KV for 3 or more seconds

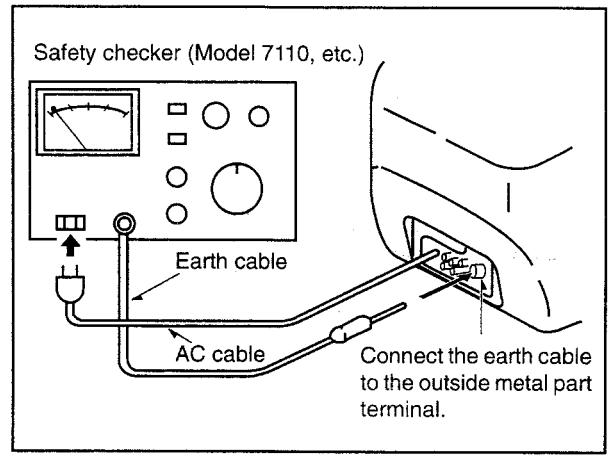


Fig-1

When servicing and checking on the TV, note the followings.

1. Keep the notices
   As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.
2. Avoid an electric shock.
   There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.
3. Use the designated parts.
   The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety.
   Therefore, the part which is replaced should be used the part which has the same character. Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.
4. Put parts and wires in the original position after assembling or wiring.
   There are parts which use the insulation material such as a tube or tape for safety, or which are assembled so that these parts do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.
5. Take care of the cathode-ray tube.
   By setting an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion.
   However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.
6. Avoid an X-lay.
   Safety is secured against an X-lay by considering about the cathode-ray tube and the high voltage peripheral circuit, etc. Therefore, when repairing the high voltage peripheral circuit, use the designated parts and do not change the circuit. Repairing except indicates causes rising of high voltage, and the cathode-ray tube emits an X-lay.
7. Perform a safety check after servicing.
   Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the places serviced.

DISASSEMBLY INSTRUCTIONS

1. HIGH-VOLTAGE CAP (ANODE CAP) REMOVAL

1-1. Cautions before Removing

Discharge the anode voltage

(1) The anode voltage is not discharged completely from the CRT of this unit even after the power is turned off. Be sure to discharge the residual anode voltage before removing the anode cap.

Do not use pliers

(2) Do not use pliers, etc. to remove the anode cap. If you used pliers and bent the hook to remove the cap, the spring characteristics of the hook could be lost, and when reinstalled, the cap would come off from the CRT anode button easily, causing an accident.

Do not turn the anode cap

(3) If the anode cap is turned in the direction of its circumference, the hook is likely to come off.

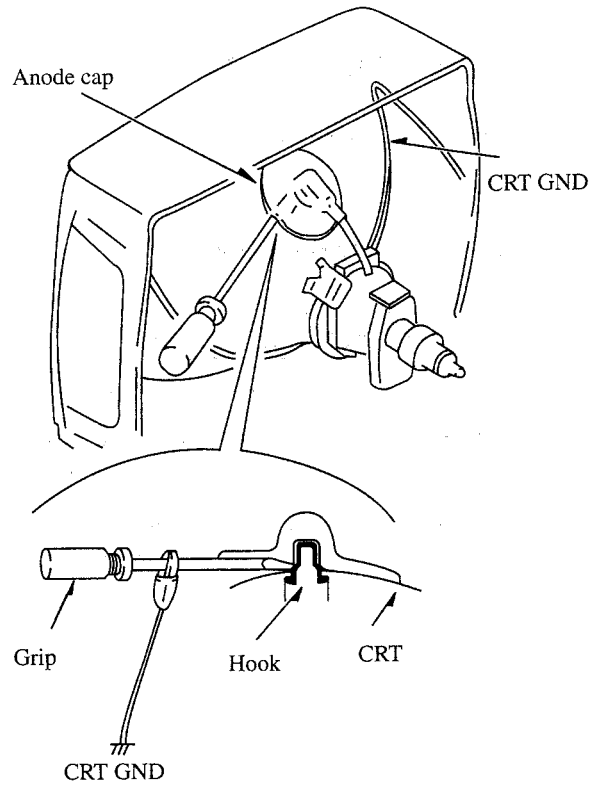


Fig. 1

1-2. Anode Cap Removal

Discharge the anode voltage. (See Figure 1)

(1) Connect a flat-bladed screwdriver to the CRT GND via an alligator clip.

(2) Use a tester to check the end of the screwdriver and ground of the TV for continuity.

(3) Touch the hook with the end of the screwdriver.
Caution : Be careful not to damage the anode cap.

(4) Turn over the anode cap.
Caution : Be careful not to damage the anode cap.

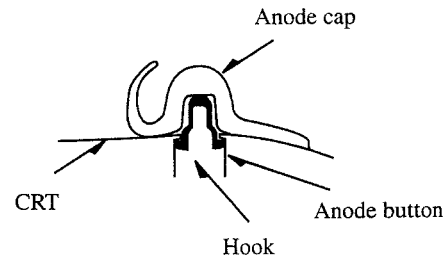


Fig. 2

(5) Push the anode cap with your thumb in the direction of arrow ① as shown in the figure, then lift the cap in the direction of arrow ② to release the hook on one side. (See Figure 3)

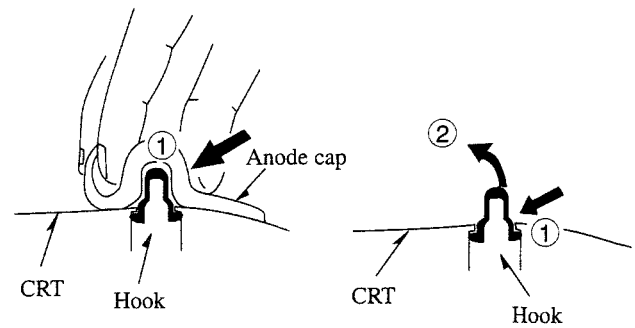


Fig. 3

(6) Turn over the anode cap on the side where the hook was released and pull out the cap in the direction opposite to that on which the cap was pushed. (See Figure 4)
Caution : Do not pull out the anode cap straight up.
: Do not pull the cap forcibly. After removing the cap, check that the hook is not deformed.

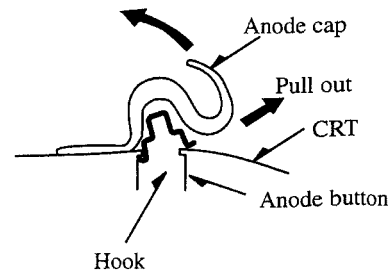


Fig. 4

2. ANODE CAP REINSTALLTION

Observe the cautions carefully so that no accident occurs due to a defect in installing the anode cap and so it does not come off.

2-1. Caution before Reinstalling

Never turn the anode cap after installing it

Never re-use the hook when it has been deformed

(1) If the anode cap is turned after it is installed, it may come off. Therefore, arrange the high-voltage cable before attaching the anode cap. (See Figure 1-1)

(2) If you have attached the anode cap before arranging the high-voltage cable, arrange the cable carefully so the cap does not turn.

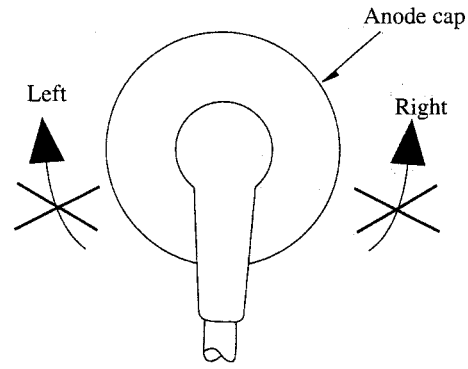


Fig. 1-1

2-2. Anode cap reinstallation

(1) Use a clean cloth moistened slightly with alcohol to clean the installation section. (See Figure 2)
Caution : Check that the installation section is free from dust, foreign matter, etc.

(2) Coat the anode cap installation circumference with an appropriate amount of the specified silicone grease (KS-650N). (See Figure 2)
Caution : Be careful that silicone grease does not enter the anode button.

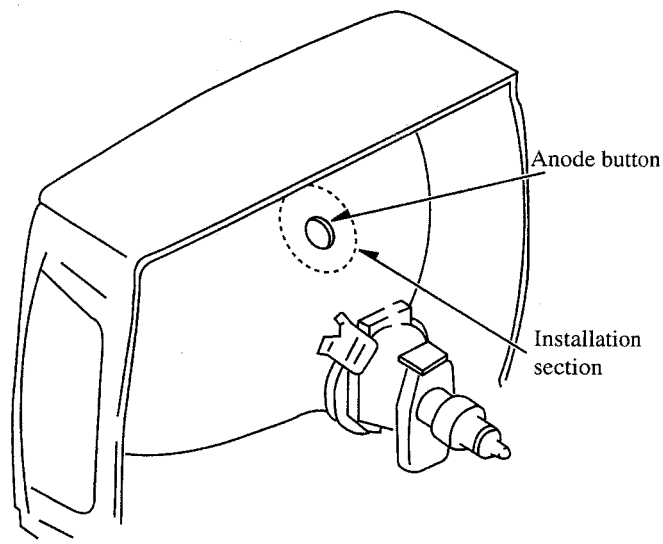


Fig. 2

(3) Eliminate twisting, etc. of the high-voltage cable and arrange it so that no twisting occurs. (See Figure 3)
Caution : If the cable is not arranged correctly, the anode cap could turn and cause an installation defect.

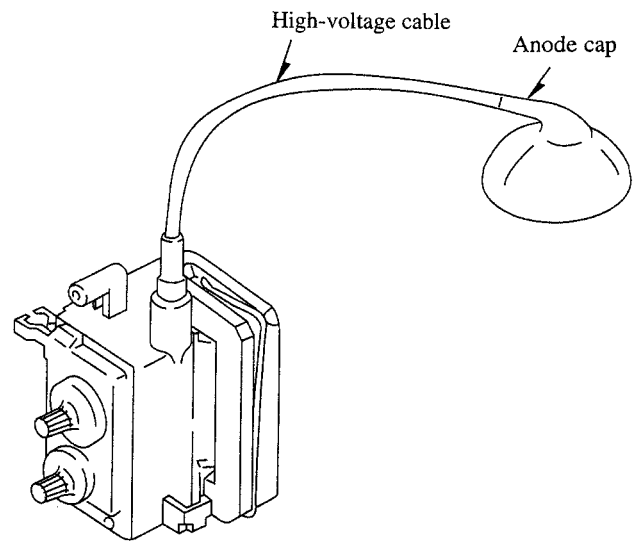


Fig. 3

(4) Turn over the rubber cap symmetrically on the left and right. (See Figure 4)
Caution : Take great care not to damage the anode cap.

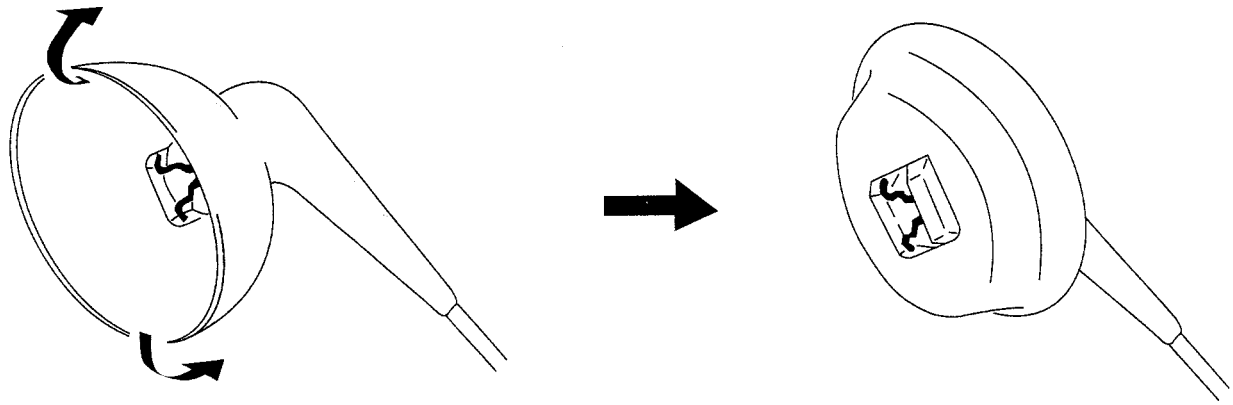


Fig. 4

(5) Fit your forefinger over the projection at the center of the cap and hold the cap between your thumb and middle finger. (See Figure 5-1)
(6) Apply the hook on one side to the anode button as shown on the figure. (See Figure 5-2)
Caution : Check that the hook is held securely.
(7) Apply the hook on the other side to the anode button as shown in Figure 5-3.

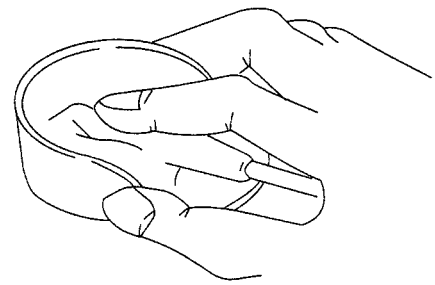
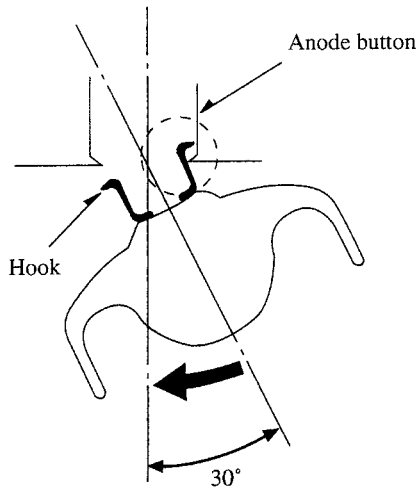


Fig. 5-1



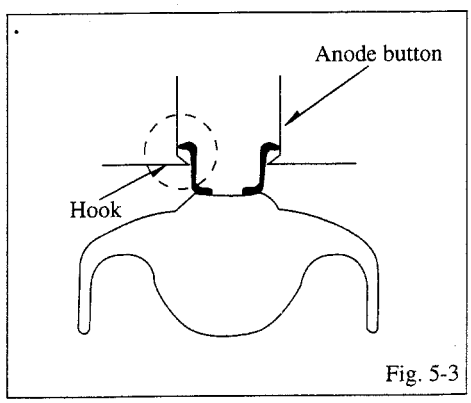


Fig. 5-3

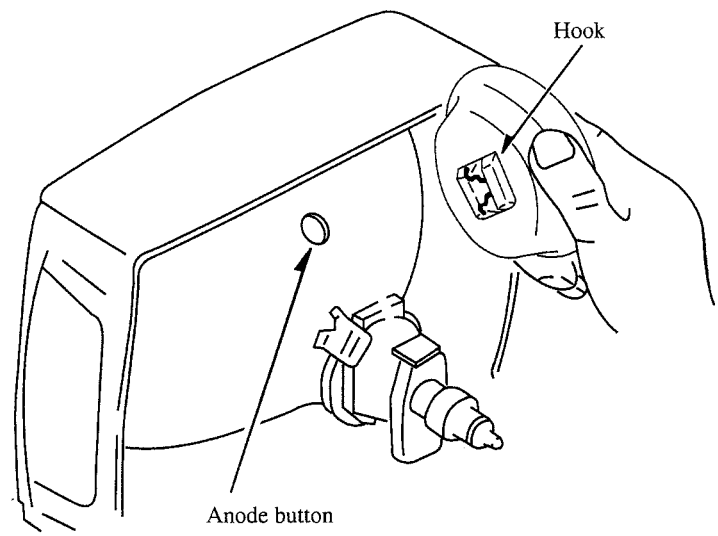


Fig. 5-2

(8) Pull the anode cap slightly with the rubber cap turned over and visually check that the hook is engaged securely.
(9) Release your hand from the rubber cap of the anode cap.
Caution : Cover the anode cap so that it does not lift.
(10) Hold the skirt of the andoe cap slightly to improve the close contact between the cap and CRT.
(11) Check that the anode cap is in close contact with the CRT. (See Figure 6)

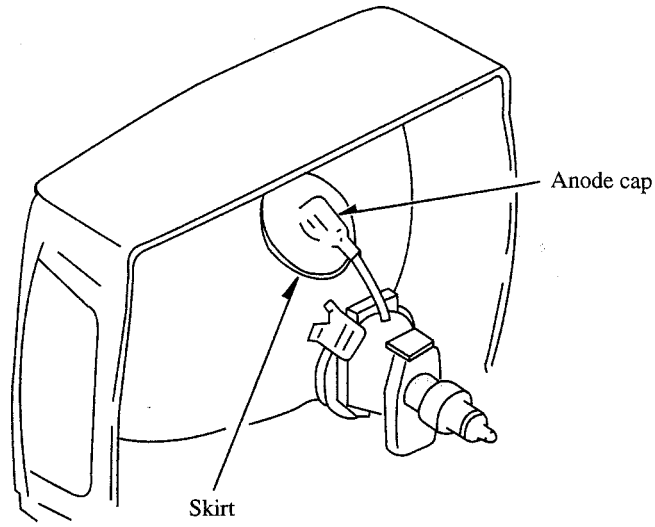


Fig. 6

3. CASE REMOVAL

3-1. Rear Cabinet Removal (See Figure 1)

(1) Remove four screws ① and three screws ②, then remove the rear cabinet in the direction of the arrow.

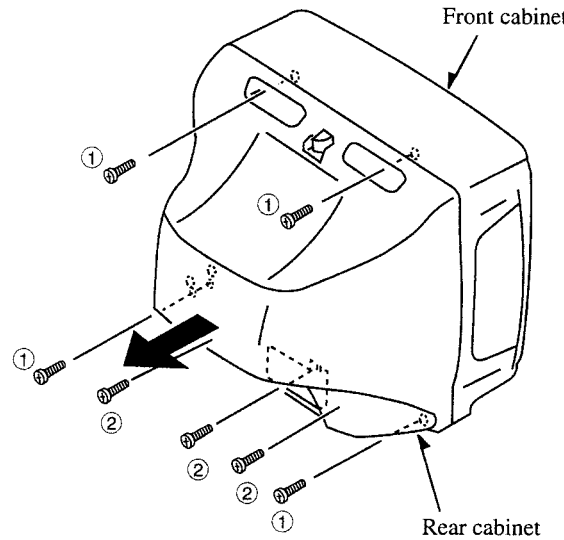


Fig. 1

3-2. Neck C.B. (PWB, NK) Removal (See Figure 2)

(1) Disconnect CN553 (CRT GND).
(2) Remove the Neck C.B. in the diection of arrow ①.

3-3. Main C.B. (PWB, MAIN) Removal (See Figure 2)

(1) Remove connector (CN401).
(2) Remove connector (CN801).
(3) Pull out the Main C.B. in the direction of the direction of arrow ②.

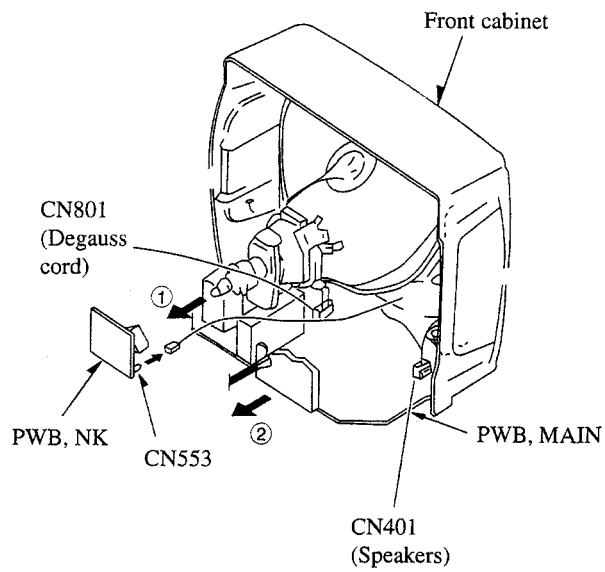


Fig. 2

ELECTRICAL MAIN PARTS LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC			
	86-LB7-621-010		IC,M37220M3-150SP
	87-A20-413-080		IC,BMR-4201
	87-A20-503-010		IC,AT24C02-10PI
	87-A90-297-010		RCR UNIT,SBX1981-52
	87-A20-371-080		IC,KA33V
	87-A20-436-010		IC,LA7565N
	87-070-080-010		IC,TA8759BN
	87-017-356-010		IC,UPC1406HA
	87-001-485-010		IC,TA8207K
	87-027-666-010		IC,TC4052BP
	87-002-779-010		IC,LA7956
	87-027-656-010		IC,TC4066BP
	87-070-237-010		IC,LA7832
	87-A20-517-010		IC,STR-S6707
	87-A20-525-010		IC,KIA7812PI
	87-A20-364-010		IC,KIA7809PI
	87-020-881-080		IC,NJM78L05A
⚠	87-001-132-080		PROTECTOR,IC ICP-N38
TRANSISTOR			
	87-A30-090-080		FET,2SK2541
	87-A30-065-080		TR,2SC2785FE
	87-A30-066-080		TR,2SA1175FE
	89-342-174-510		TR,2SC4217(D/E)
	89-334-674-580		TR,2SC3467(D/E)
	87-A30-095-010		TR,2SD2333
	89-320-610-080		TR,2SC2061
	87-A30-041-010		TR,SE115N
DIODE			
	87-017-437-080		DIODE,1N4148M
	87-070-033-080		ZENER,UZ7.5BS
	87-070-035-080		ZENER,UZ12BS
	87-070-034-080		ZENER,UZ9.1BS
	87-070-036-080		ZENER,UZ16BS
	87-002-654-080		DIODE,S5566B
	87-017-963-080		DIODE,TVR5G
⚠	87-A40-371-010		DIODE,D3SBA60-4001
⚠	87-070-111-060		DIODE,RU30A
	87-017-354-080		DIODE,RU3
MAIN C.B			
BPF201	87-A90-337-010		FLTR,SAW OFW-K2959M
BPF305	84-LB3-622-010		FLTR,BELL 2 S-10E
BT301	84-LB2-631-010		CONN ASSY,5P TN-4
C1	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C2	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C3	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C4	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C5	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C6	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C7	87-018-123-080		CAP,TC U 220P-50 K B UP050
C9	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C10	87-015-975-010		CAP,E 220-6.3 M SR
C11	87-016-637-080		CAP,E 10-50 M SSL
C12	87-018-119-080		CAP,TC U 100P-50 K B UP050
C13	87-016-629-080		CAP,E 0.1-50 M SSL
C14	87-016-637-080		CAP,E 10-50 M SSL
C16	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C17	87-018-119-080		CAP,TC U 100P-50 K B UP050
C18	87-018-119-080		CAP,TC U 100P-50 K B UP050
C19	87-018-119-080		CAP,TC U 100P-50 K B UP050
C23	87-016-634-080		CAP,E 2.2-50 M SSL
C25	87-016-636-080		CAP,E 4.7-50 M SSL
C26	87-016-636-080		CAP,E 4.7-50 M SSL
C27	87-016-633-080		CAP,E 1-50 M SSL
C28	87-016-636-080		CAP,E 4.7-50 M SSL
C29	87-016-636-080		CAP,E 4.7-50 M SSL
C30	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C40	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C101	87-016-633-080		CAP,E 1-50 M SSL
C102	87-016-583-080		CAP,E 100-25 M SSL
C103	87-A10-207-080		CAP,TC U 0.01-50 K B UP050
C212	87-016-633-080		CAP,E 1-50 M SSL
C213	87-016-583-080		CAP,E 100-25 M SSL
C214	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C218	87-018-133-080		CAP,TC U 4700P-16 N X UP050
C219	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C221	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C222	87-018-121-080		CAP,TC U 150P-50 K B UP050
C223	87-016-633-080		CAP,E 1-50 M SSL
C225	87-018-119-080		CAP,TC U 100P-50 J B UP050
C301	87-018-122-080		CAP,TC U 180P-50 K B UP050
C302	87-018-122-080		CAP,TC U 180P-50 K B UP050
C303	87-018-122-080		CAP,TC U 180P-50 K B UP050
C307	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C309	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C310	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C311	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C312	87-016-632-080		CAP,E 0.47-50 M SSL
C313	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C314	87-018-122-080		CAP,TC U 180P-50 K B UP050
C315	87-018-107-080		CAP,TC U 18P-50 J SL UP050
C316	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C320	87-010-529-080		CAP,E 1-50 M BP
C327	87-016-575-080		CAP,E 220-16 M SSL
C328	87-018-195-080		CAP,TC U 1200P-16 M X UP050
C329	87-016-633-080		CAP,E 1-50 M SSL
C330	87-018-124-080		CAP,TC U 270P-50 K B UP050
C332	87-016-635-080		CAP,E 3.3-50 M SSL
C335	87-016-627-080		CAP,E 47-16 M SSL
C336	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C344	87-016-632-080		CAP,E 0.47-50 M SSL
C348	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C349	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C350	87-018-123-080		CAP,TC U 220P-50 K B UP050
C351	87-016-633-080		CAP,E 1-50 M SSL
C352	87-016-633-080		CAP,E 1-50 M SSL
C354	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C356	87-018-122-080		CAP,TC U 180P-50 K B UP050
C372	87-016-637-080		CAP,E 10-50 M SSL
C373	87-018-115-080		CAP,TC U 47P-50 J SL UP050
C374	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C375	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C376	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C377	87-016-582-080		CAP,E 47-25 M SSL
C378	87-016-633-080		CAP,E 1-50 M SSL
C399	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C403	87-016-583-080		CAP,E 100-25 M SSL
C404	87-016-633-080		CAP,E 1-50 M SSL
C405	87-016-633-080		CAP,E 1-50 M SSL
C406	87-016-633-080		CAP,E 1-50 M SSL
C407	87-016-633-080		CAP,E 1-50 M SSL
C409	87-016-638-080		CAP,E 22-50 M SSL
C410	87-016-583-080		CAP,E 100-25 M SSL
C411	87-016-583-080		CAP,E 100-25 M SSL
C413	87-016-582-080		CAP,E 47-25 M SSL
C414	87-016-582-080		CAP,E 47-25 M SSL
C415	87-010-529-080		CAP,E 1-50 M BP
C416	87-010-529-080		CAP,E 1-50 M BP
C417	87-016-582-080		CAP,E 47-25 M SSL
C419	87-016-583-080		CAP,E 100-25 M SSL
C420	87-016-587-080		CAP,E 1000-25 M SSL
C421	87-016-576-080		CAP,E 330-16 M SSL
C422	87-016-576-080		CAP,E 330-16 M SSL
C451	87-016-634-080		CAP,E 2.2-50 M SSL

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C452	87-016-583-080		CAP,E 100-25 M SSL
C453	87-016-633-080		CAP,E 1-50 M SSL
C454	87-016-637-080		CAP,E 10-50 M SSL
C456	87-016-637-080		CAP,E 10-50 M SSL
C457	87-016-633-080		CAP,E 1-50 M SSL
C458	87-016-637-080		CAP,E 10-50 M SSL
C459	87-016-637-080		CAP,E 10-50 M SSL
C460	87-016-622-080		CAP,E 470-10 M SSL
C461	87-016-637-080		CAP,E 10-50 M SSL
C462	87-016-637-080		CAP,E 10-50 M SSL
C465	86-016-574-087		CAP,E 100-16 M SSL
C501	87-018-127-080		CAP,TC U 470P-50 K B UP050
C502	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C503	87-016-637-080		CAP,E 10-50 M SSL
C507	87-018-118-080		CAP,TC U 82P-50 K B UP050
C508	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C509	87-016-641-080		CAP,E 100-50 M SSL
C510	87-016-592-080		CAP,E 220-35 M SSL
C513	87-016-587-080		CAP,E 1000-25 M SSL
C514	87-016-633-080		CAP,E 1-50 M SSL
C603	87-010-976-080		CAP,CER 1000P-500 KB DD10
C605	87-016-481-010		CAP,PP 0.47-200 J
C606	87-016-490-010		CAP,M/P 8200P-1.25K PH
C607	87-012-399-010		CAP,CER 1500P-2K K BN DE
⚠ C801	87-A10-223-010		CAP,M/P 0.22-250 K
⚠ C802	87-A10-223-010		CAP,M/P 0.22-250 K
C806	87-A10-176-010		CAP,TC-U 1000P-50 K B
C807	87-016-637-080		CAP,E 10-50 M SSL
C808	87-016-647-060		CAP,E 47-160 SSL
C809	87-016-515-080		CAP,CER 1000P-1 K B DE
⚠ C810	87-A10-407-090		CAP,E 220-400 30X30
C811	87-016-583-080		CAP,E 330-16 M SSL
⚠ C812	87-A10-413-010		CAP,CER 2200P-4K M E KX
C813	87-A10-469-080		CAP,CER 2200P-500KB
C818	87-016-572-080		CAP,E 470-6.3 M SSL
C820	87-010-976-080		CAP,CER 1000P-500 K B DD10
⚠ C821	87-016-588-080		CAP,E 2200-25 M SSL
C825	87-016-586-080		CAP,E 470-25 M SSL
C830	87-012-386-010		CAP,CER 470P-2K K BN DE
C831	87-016-599-080		CAP,E 10-250 M SSL
C832	87-016-594-080		CAP,E 1000-35 M SSL
C833	87-016-515-080		CAP,CER 1000P-1K K B DE
C835	87-016-584-080		CAP,E 220-25 M SSL
C837	87-016-637-080		CAP,E 10-50 M SSL
C838	87-016-515-080		CAP,CER 1000P-1K K B DE
C839	87-016-637-080		CAP,E 10-50 M SSL
⚠ C840	87-016-649-080		CAP,E 220-160 M SSL
CF203	87-A90-223-080		FLTR, SFSH6.0MCB
CF205	87-008-578-080		FLTR,TPS6.5MB2
CF206	87-008-577-080		FLTR,TPS5.5MB2
D5	87-070-110-010		LED,SLP-181B-51 RED
DL301	84-LB3-638-010		DL,ADL-CP144E
DL302	87-A90-370-010		DELAY LINE,ELB10Z334
⚠ F801	87-035-458-010		FUSE,4A 250V T 218
FB601	87-003-223-080		F-BEAD,-3.4-7.5 BL02RN2
FB801	87-003-223-080		F-BEAD,-3.4-7.5 BL02RN2
FB802	87-003-223-080		F-BEAD,-3.4-7.5 BL02RN2
⚠ FC801	87-033-213-080		FUSE CLAMP,PFC5000
⚠ FC802	87-033-213-080		FUSE CLAMP,PFC5000
J401	87-A60-322-010		JACK,PIN 3P Y-W-R W/SW
J402	87-A60-324-010		JACK,PIN 6P Y-W-R W/SW
J403	87-009-216-010		JACK,3.5 BLK ST W/SW
L1	87-003-152-080		COIL, 100UH
L101	87-005-481-080		COIL,47UH J FLR50
L206	87-003-144-080		COIL,6.8UH K LAL02
L207	87-003-102-080		COIL,10UH K LAL02
L210	86-LB7-655-010		COIL,VCO 38.0MHZ LA7565N
L221	87-003-102-080		COIL,10UH K LAL02
L301	84-LB3-668-010		FLTR,SECAM DET
L302	84-LB3-668-010		FLTR,SECAM DET
L303	82-JT2-608-010		FLTR,DL PHASE
L304	87-003-145-080		COIL,8.2UH K LAL02
L305	82-JT2-611-010		FLTR, SECAM REF
L306	87-003-286-080		COIL,56UH K LAL02
L308	87-003-147-080		COIL,22UH K LAL02
L309	87-003-286-080		COIL,56UH K LAL02
L310	87-005-473-080		COIL,10UH J FLR50
L601	84-LB3-635-010		COIL,WLH-600LIN
L801	87-005-770-080		COIL, 47UH K #7607
L803	84-LB2-623-010		DGC,20PAL3
⚠ LF802	84-LB3-670-010		FLTR,LINE HL-24-822
⚠ PN801	82-481-649-010		CONN,2P V TV-50P
⚠ PS802	87-A30-096-010		P-TR,TLP721F
⚠ PT801	86-LB4-655-010		PT,KER S/W TRANS('20')
R102	87-A00-164-090		RES,M/F 12K-2W J RSF(S)
R326	87-A00-067-090		RES,M/F 6.8K-3W J
R405	87-A00-267-090		RES,M/F 1.0-2W J RSF(S)
R412	87-025-597-090		RES,M/F 220-1W J
R413	87-025-597-090		RES,M/F 220-1W J
R608	87-025-598-010		RES,CEM 2.2K-5W J
R616	87-A00-049-060		RES,FUSE 2.2K-1/2W J R-TYPE
R620	87-025-585-010		RES,CEM 2.7-5W J
R801	87-022-500-010		RES,CEM 2.2-10W K
R802	87-A00-170-090		RES,M/F 82K-3W J RSF(S)
R806	87-A00-208-090		RES,M/F 22-1/2W
⚠ R809	87-029-160-060		RES,FUSE 2.2-1W J
R811	87-A00-216-090		RES,M/F 0.33-2W J RSF(S)
R812	87-A00-224-090		RES,SD 8.2M-1W J CE
⚠ R818	87-A00-282-090		RES,FUSE 5.6-1W J CE
⚠ R821	87-029-170-060		RES,FUSE 3.9-1W J
SFR1	87-024-177-080		SFR,220K H RH0638C
SFR2	87-024-176-080		SFR,100K H RH0638C
SFR201	87-024-173-080		SFR,22K H RH0638C
SFR301	87-024-168-080		SFR,1K H RH0638C
SFR302	87-024-168-080		SFR,1K H RH0638C
SFR501	87-024-175-080		SFR,47K H RH0638C
SP401	86-LBT-620-010		SPKR,F 45 8OHM 3W
SP402	86-LBT-620-010		SPKR,F 45 8OHM 3W
SW2	87-036-267-080		SW,TACT SKHVBK
SW3	87-036-267-080		SW,TACT SKHVBK
SW4	87-036-267-080		SW,TACT SKHVBK
SW5	87-036-267-080		SW,TACT SKHVBK
SW6	87-036-267-080		SW,TACT SKHVBK
SW7	87-036-267-080		SW,TACT SKHVBK
⚠ SW801	87-A90-364-010		SW,PUSH SDDLB1-C-D-2
⚠ T601	84-LB3-651-010		TRANS,HD MS-101N
⚠ T602	84-LB2-606-010		FBT, HFL1530G
⚠ TH801	87-A90-379-010		POS-THMS,PH451C26BG180N270
TU101	86-LB7-652-010		TU UNIT, BT-AH452
X1	87-030-212-080		VIB,CER 8.000MHZ CST
X201	87-A70-043-010		VIB,CER 503KHZ CSBE5
X301	87-A70-054-080		VIB,XTAL 4.43MHZ AQC-1018
X302	87-030-327-010		VIB,CER 503.500KHZ CSB F30
X303	87-A70-007-080		VIB,XTAL 3.58MHZ AQC-1001

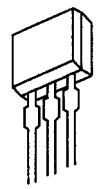
NK C.B

C551	87-010-976-080		CAP,CER 1000P-500 K B DD10
C552	87-012-097-010		CAP,CER 1000P-2K K BN DE
C553	87-018-125-080		CAP,TC U 330P-50 K B UP050
C554	87-018-125-080		CAP,TC U 330P-50 K B UP050
C555	87-018-125-080		CAP,TC U 330P-50 K B UP050
CN554	86-LBU-670-010		SOCKET,CRT 9P CVT3326 1603
L551	87-005-490-080		COIL,270UH J FLR50
R551	87-A00-041-090		RES,M/F 12K-2W J L-FORMING
R552	87-A00-041-090		RES,M/F 12K-2W J L-FORMING
R553	87-A00-041-090		RES,M/F 12K-2W J L-FORMING
SFR551	87-024-522-080		SFR,4.7K V RH063LC
SFR552	87-024-522-080		SFR,4.7K V RH063LC
SFR553	87-024-522-080		SFR,4.7K V RH063LC

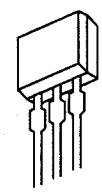
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
SFR554	87-024-519-080		SFR,470 V RH063LC
SFR555	87-024-519-080		SFR,470 V RH063LC

TRANSISTOR ILLUSTRATION

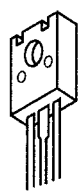
E C B
2SC3467
2SC2061



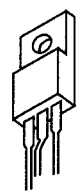
S D G
2SK2541



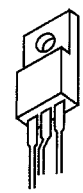
E C B
2SC2785
2SA1175



E C B
2SC4217



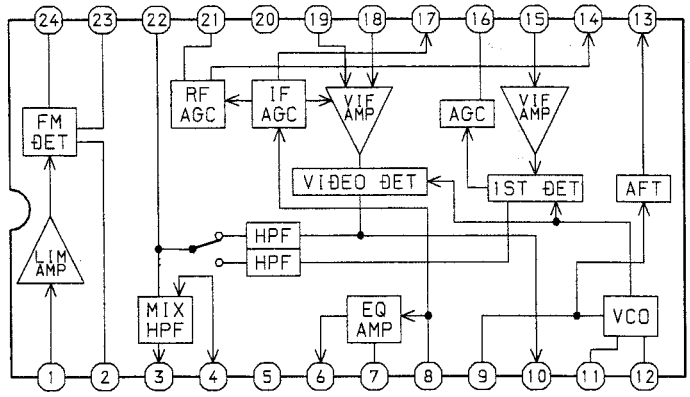
1 2 3
SE115N



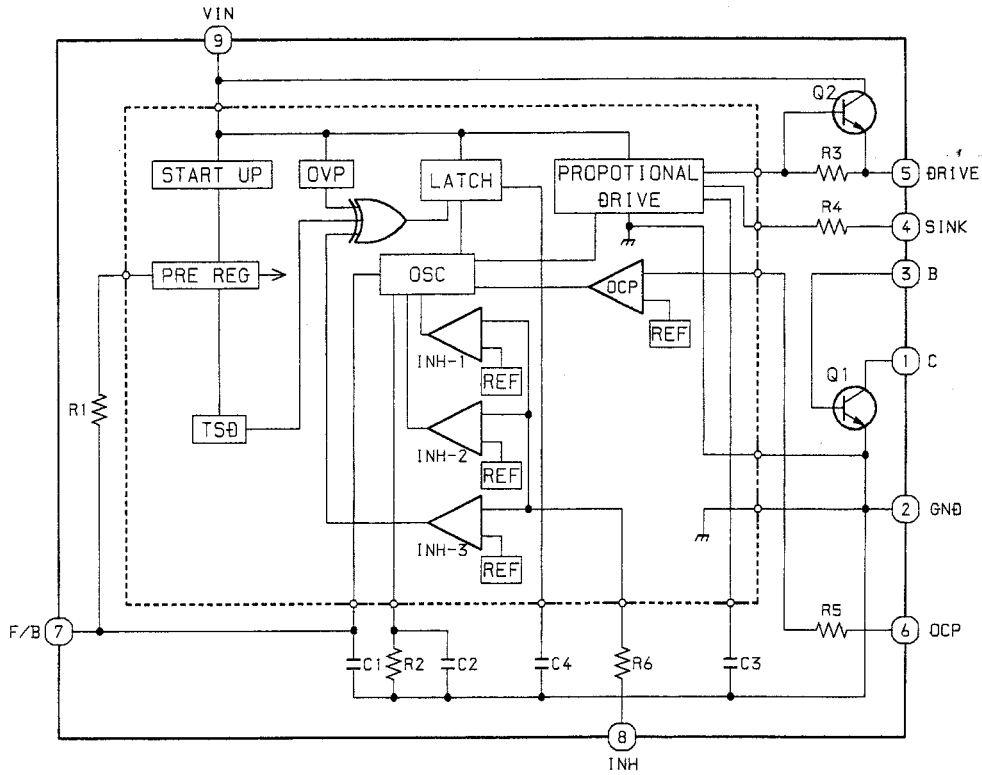
B C E
2SD2333

IC BLOCK DIAGRAM – 1

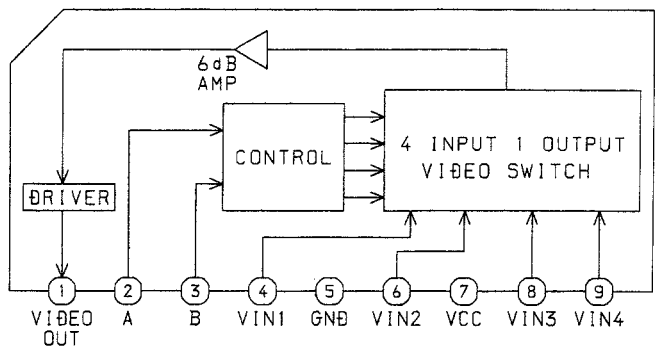
IC, LA7565N



IC, STR-S6707

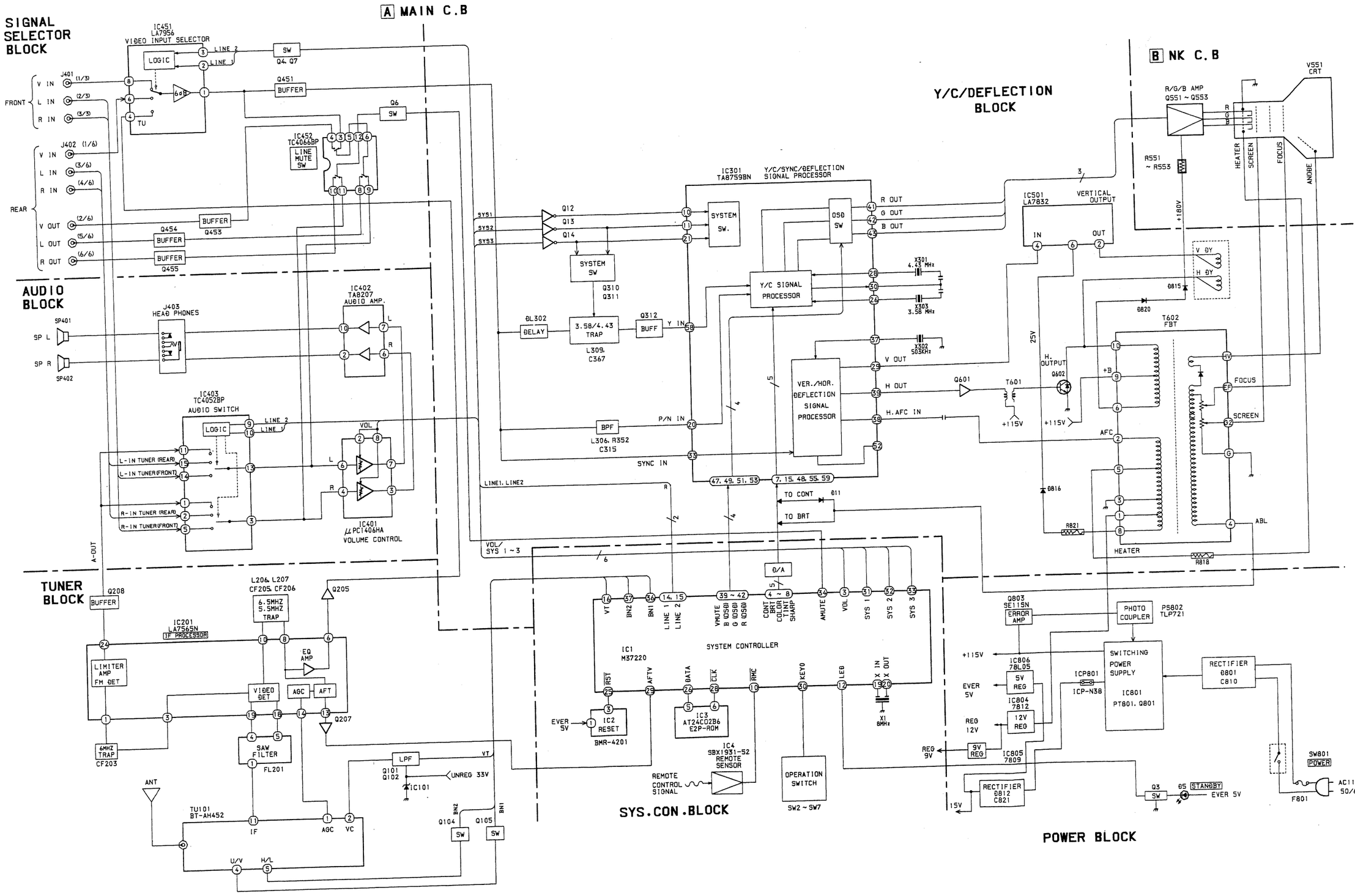


IC, LA7956



A	B	VIN1	VIN2	VIN3	VIN4
H	H	ON	OFF	OFF	OFF
L	H	OFF	ON	OFF	OFF
H	L	OFF	OFF	ON	OFF
L	L	OFF	OFF	OFF	ON

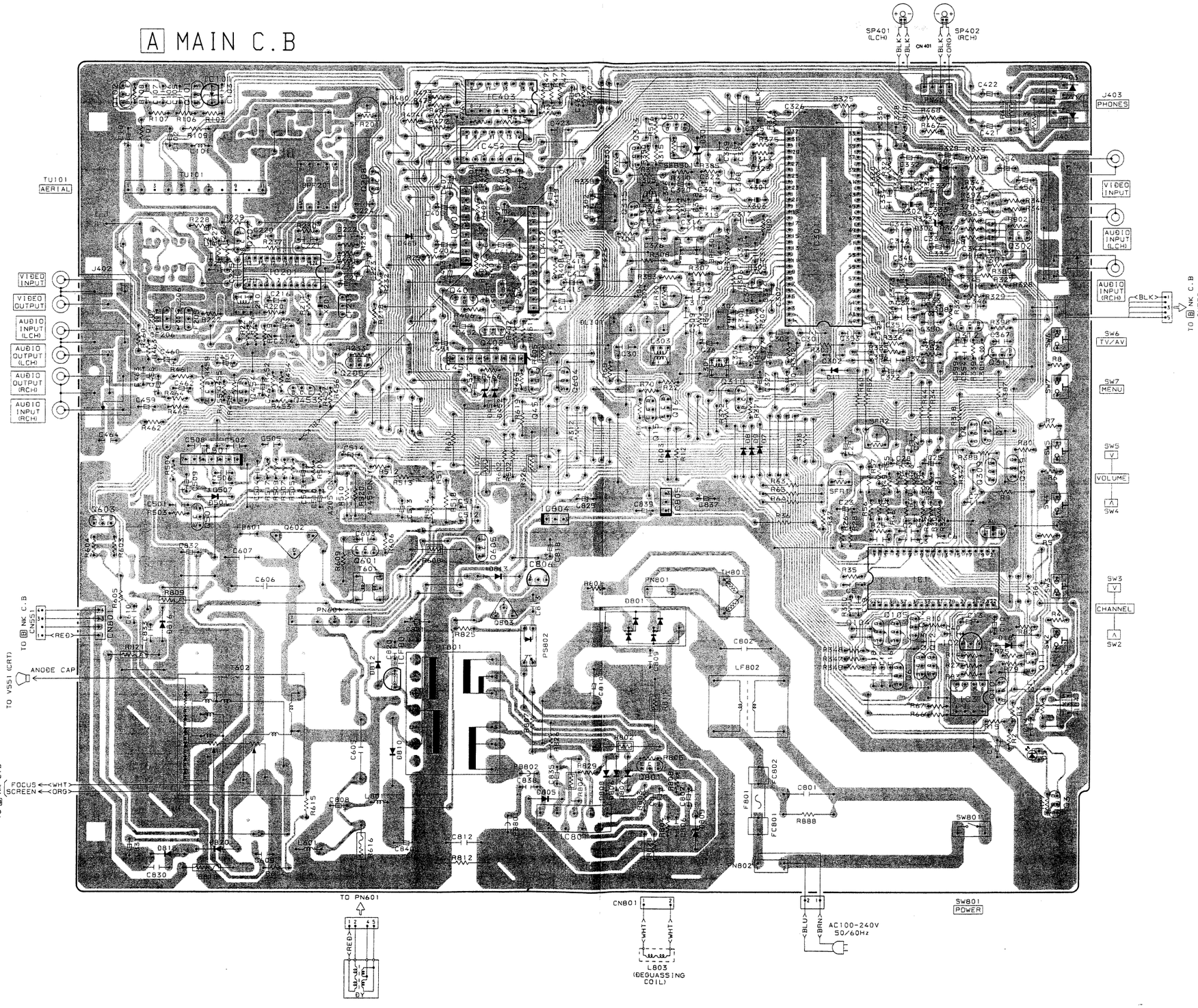
BLOCK DIAGRAM



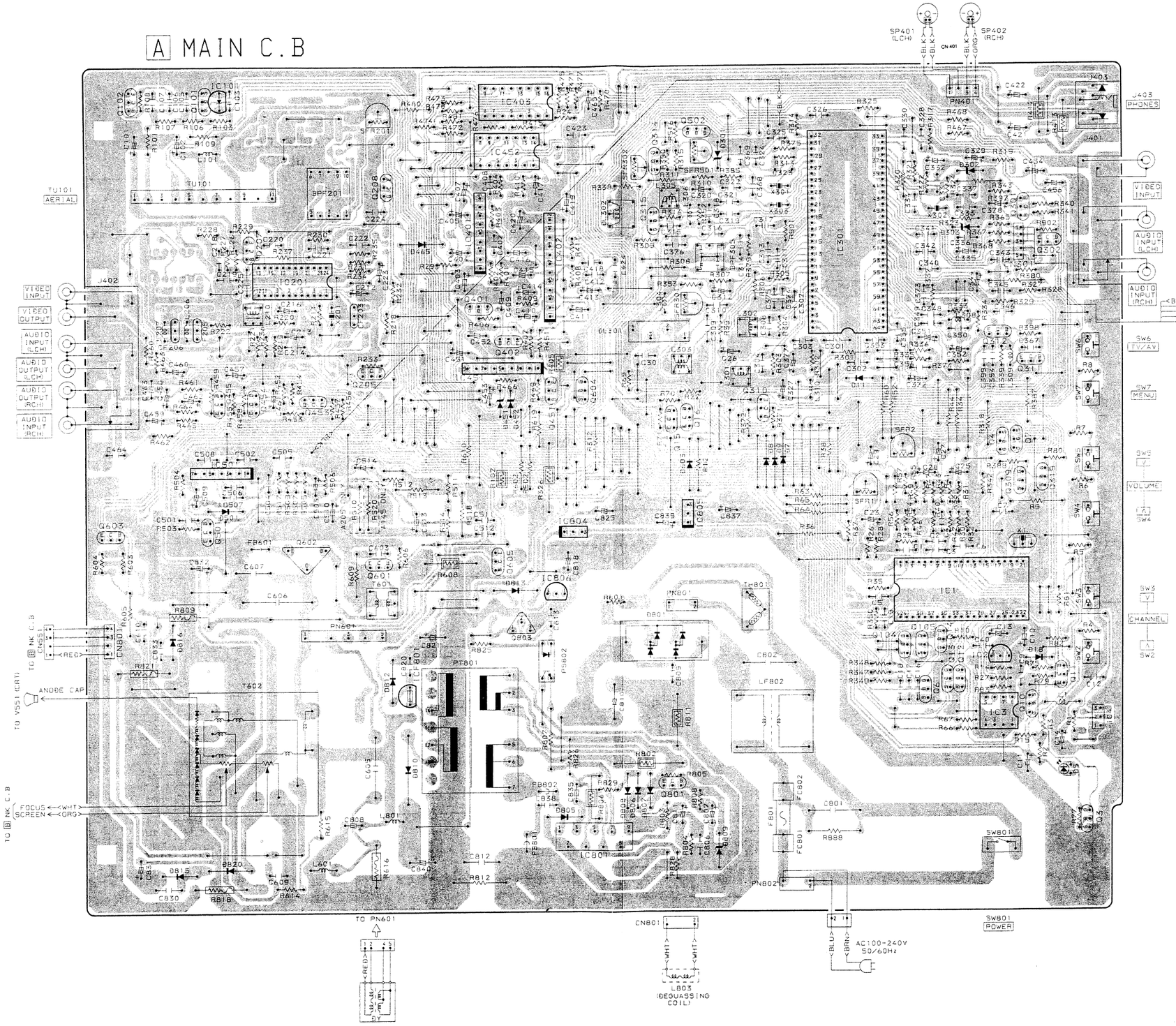
1 2 3 4 5 6 7 8 9 10 11 12 13 14

A B C D E F G H I J

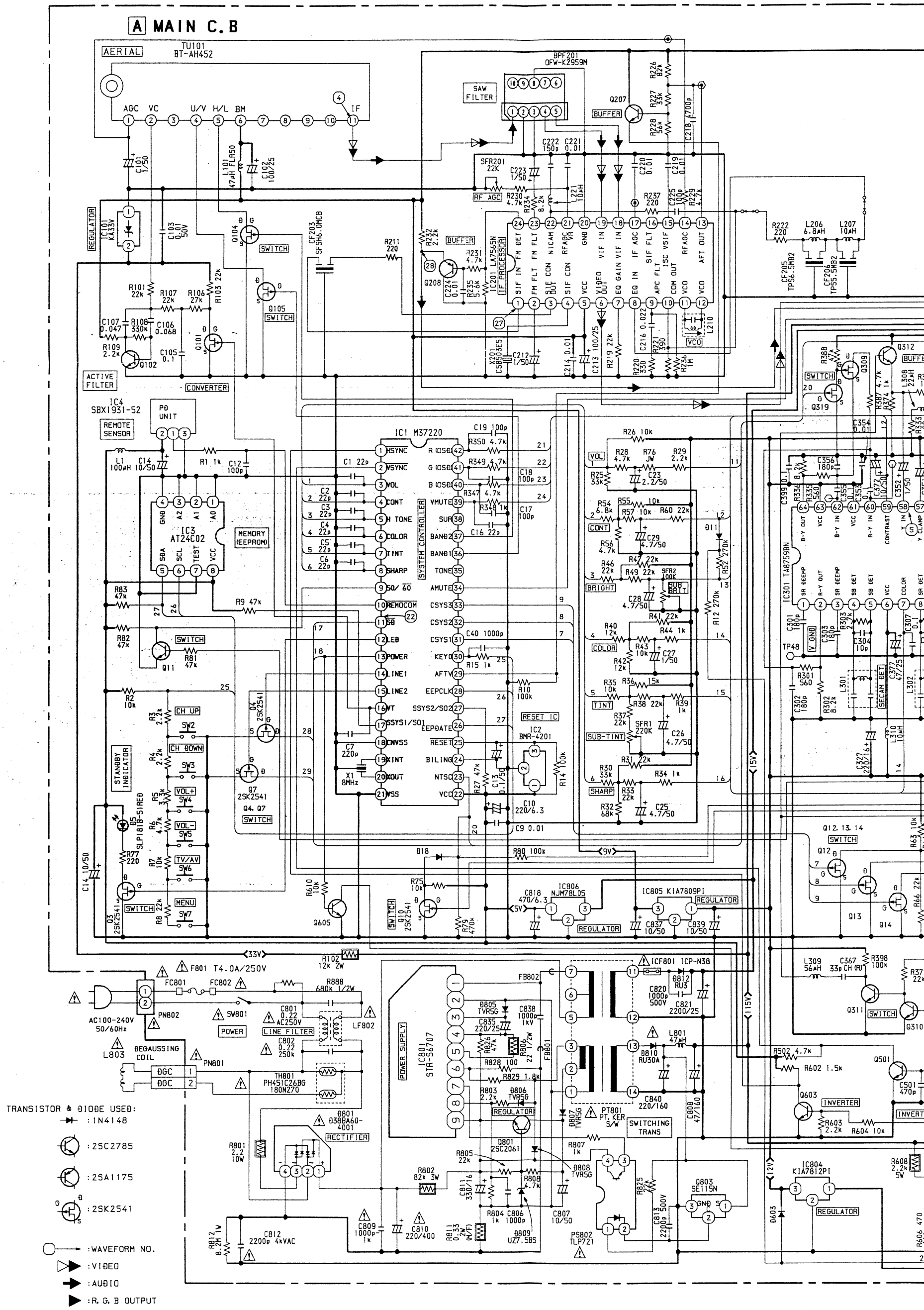
A MAIN C.B

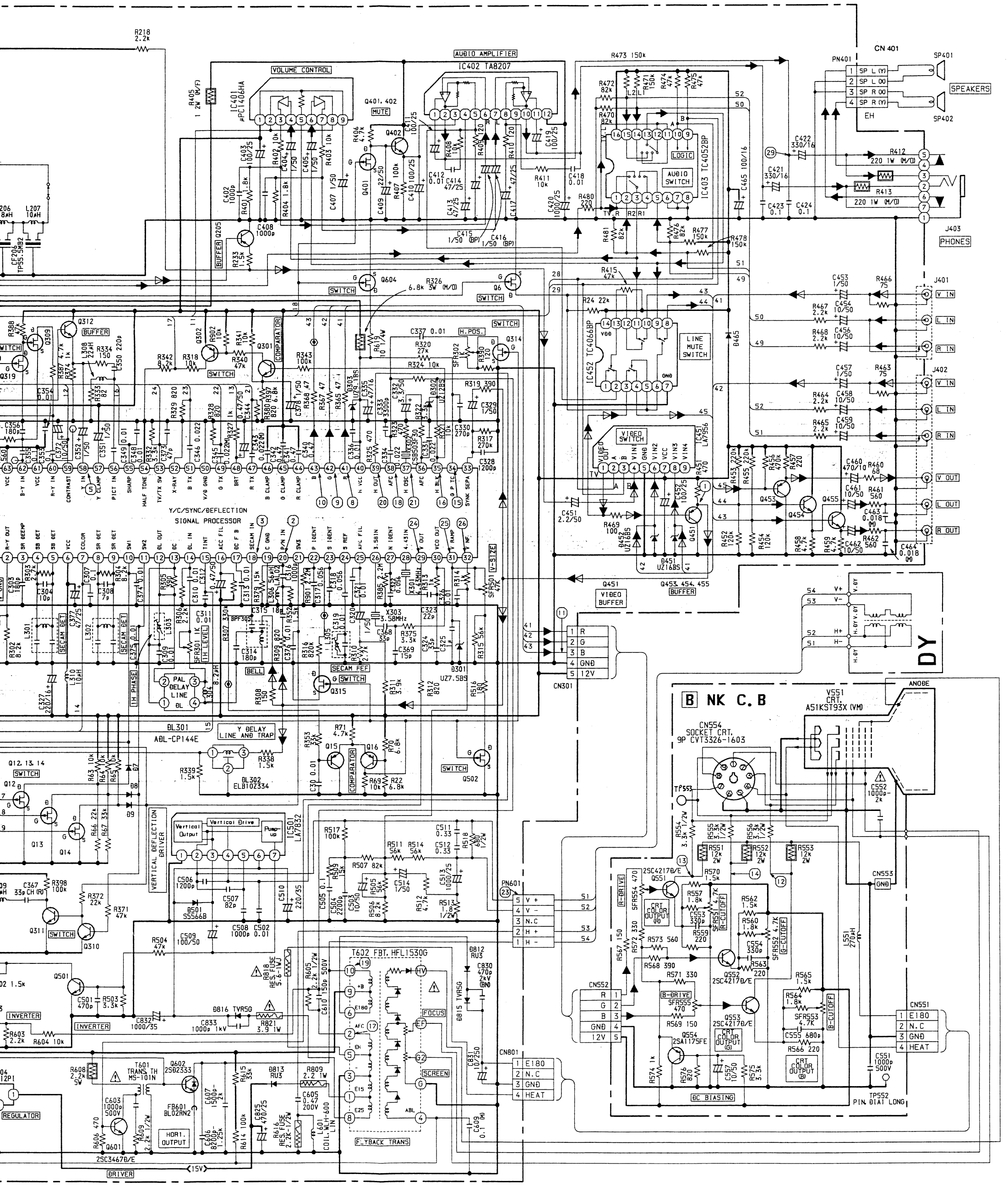


A MAIN C.B


SP401 (LCH)
SP402 (RCH)
CN401
J403 PHONES
J401
VIDEO INPUT
AUDIO INPUT (LCH)
AUDIO INPUT (RCH)
TO B NK C.B CN552
SW6 TV/AV
SW7 MENU
SW5 VOLUME
SW4
SW3 CHANNEL
SW2
TU101 AERIAL
J402
VIDEO INPUT
VIDEO OUTPUT
AUDIO INPUT (LCH)
AUDIO OUTPUT (LCH)
AUDIO OUTPUT (RCH)
AUDIO INPUT (RCH)
TO B NK C.B CN551
ANODE CAP
TO V551 (CRT)
FOCUS
SCREEN
TO PN601
CN801
L803 (DEGUASSING COIL)
AC100-240V 50/60Hz
SW801 POWER

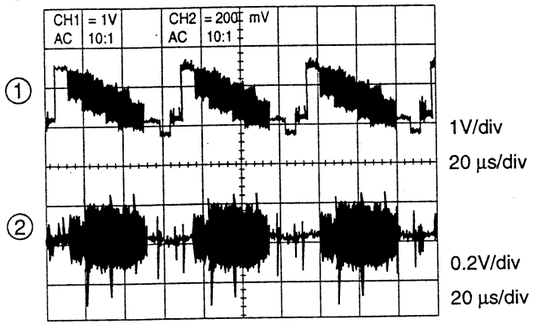
A MAIN C.B


AERIAL
TU101 BT-AH452
AGC VC U/V H/L BM IF
BPF201 OFW-K2959M
SAW FILTER
Q207 BUFFER
SFR201 22K
RF AGC
REGULATOR
IC101 KA33V
SWITCH
CF203 SFSH6.0MCB
BUFFER
Q208
IC201 LA7565N IF PROCESSOR
SIF IN FM DET FM FLT FM FLT NICAM SIF CON RFAGC VR GND VIF IN VIF IN IF AGC SIF FLT VSIF ISC RFAGC AFT OUT
SIF CON VCC VIDEO OUT EQ GAIN EQ IN APC FLT COM OUT VCO VCO
CF205 TPS6.5MB2
CF206 TPS5.5MB2
VCO
ACTIVE FILTER
CONVERTER
IC4 SBX1931-52
PD UNIT
REMOTE SENSOR
IC3 AT24C02
MEMORY (EEPROM)
IC1 M37220
SYSTEM CONTROLLER
HSYNC VSYNC VOL CONT H TONE COLOR TINT SHARP SO/SO REMOCOM SB LED POWER LINE1 LINE2 NT SSYS1/SO1 CNVSS XINT XOUT VSS
R (OSD) G (OSD) B (OSD) VMUTE SUR BAND2 BAND1 TONE AMUTE CSYS3 CSYS2 CSYS1 KEYO AFTV EEPCLK SSYS2/SO2 EEPDATE RESET BILING NTSC VCC
RESET IC
IC2 BMR-4201
X1 8MHz
STANDBY INDICATOR
CH UP CH DOWN VOL+ VOL- TV/AV MENU
SW2 SW3 SW4 SW5 SW6 SW7
Q5 SLP1818-51RED
Q3 2SK2541
Q4 2SK2541
Q7 2SK2541
Q4, Q7 SWITCH
Q105 SWITCH
Q104 SWITCH
Q101 SWITCH
Q102
Q605
Q610 SWITCH
Q10 2SK2541
Q11 SWITCH
IC806 NJM78L05
IC805 KIA7809PI
REGULATOR
VOL CONT BRIGHT COLOR TINT SUB-TINT SHARP
SUB BRIT
IC301 TA8759BN
SR DEEMP R-Y OUT SR DEEMP SB DET SB DET VCC COLOR SR DET
B-Y OUT VCC B-Y IN VCC R-Y IN CONTRAST Y IN Y CLAMP
SECAM DET
Q12, 13, 14 SWITCH
Q309 SWITCH
Q319 SWITCH
Q312 BUFFER
Q311 SWITCH
Q310
Q501
Q603 INVERTER
INVERTER
Q13
Q14
F801 T4.0A/250V
FC801 FC802
SW801 POWER
PN802
AC100-240V 50/60Hz
LINE FILTER
LF802
L803 DEGAUSSING COIL
PN801
TH801 PH451C26BG 180N270
D801 D38BA60-4001 RECTIFIER
IC801 STR-S6707
POWER SUPPLY
FB802
PT801 PT. KER S/W
SWITCHING TRANS
PS802 TLP721
ICF801 ICP-N38
IC804 KIA7812PI
REGULATOR
33V 15V 11.5V 9V 5V 12V
TRANSISTOR & DIODE USED:
:1N4148
:2SC2785
:2SA1175
:2SK2541
:WAVEFORM NO.
:VIDEO
:AUDIO
:R, G, B OUTPUT

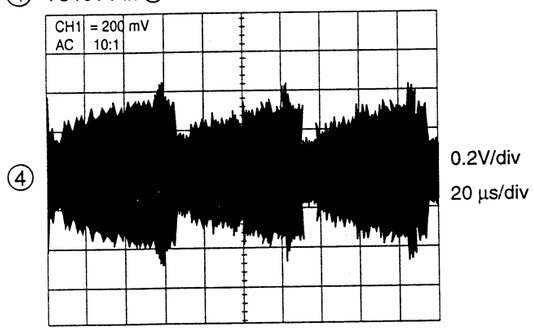

AUDIO AMPLIFIER
IC402 TA8207
VOLUME CONTROL
IC401 μPC1406HA
MUTE
Q401, 402
LOGIC
AUDIO SWITCH
IC403 TC4052BP
IC452 TC4066BP
LINE MUTE SWITCH
VIDEO SWITCH
IC451 LA7956
VIDEO BUFFER
CN 401
PN401
SP401
SP402
SPEAKERS
EH
J403
PHONES
J401
J402
V IN
L IN
R IN
V OUT
L OUT
R OUT
CN301
Y/C/SYNC/DEFLECTION SIGNAL PROCESSOR
BUFFER
SWITCH
COMPARATOR
BELL
PAL DELAY LINE
1H PHASE
SECAM DET
SECAM REF
BPF305
1H LEVEL
BL301
A0L-CP144E
Y DELAY LINE AND TRAP
BL302
ELB10Z334
VERTICAL DEFLECTION DRIVER
IC501 LA7832
Vertical Drive
Vertical Output
Pump up
PN601
CN801
T602 FBT. HFL1530G
FOCUS
SCREEN
ABL
FLYBACK TRANS
HOR. OUTPUT
REGULATOR
INVERTER
DRIVER
CN552
CN553
CN551
R-DRIVE
G-DRIVE
B-DRIVE
R-CUTOFF
G-CUTOFF
B-CUTOFF
DC BIASING
CRT COLOR OUTPUT (R)
CRT COLOR OUTPUT (G)
CRT COLOR OUTPUT (B)
V551 CRT, A51KST93X (VM)
CN554 SOCKET CRT, 9P CVT3326-1603
TP553
TP552 PIN 01A1 LONG
ANODE
B NK C.B
DY

WAVEFORM

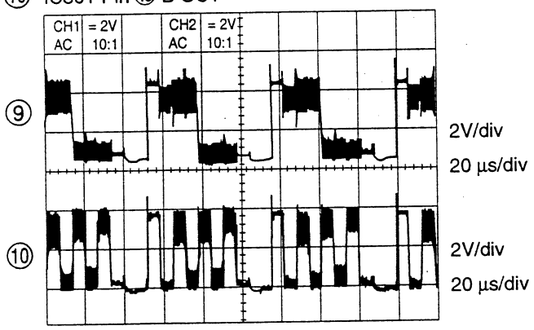
① Q451 Emitter PAL TU IN
② IC301 Pin ⑳ PAL TU IN



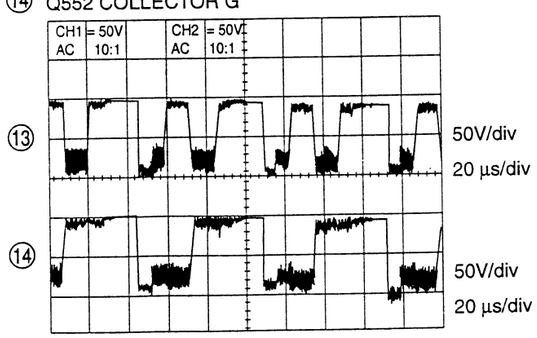
④ TU101 Pin ⑪ IF



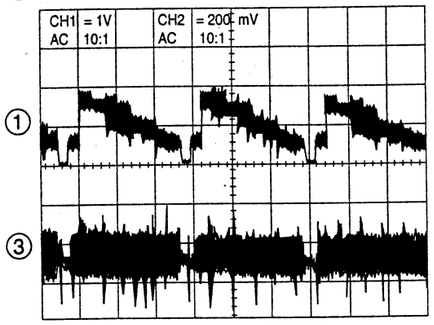
⑨ IC301 Pin ㊷ G OUT
⑩ IC301 Pin ㊸ B OUT



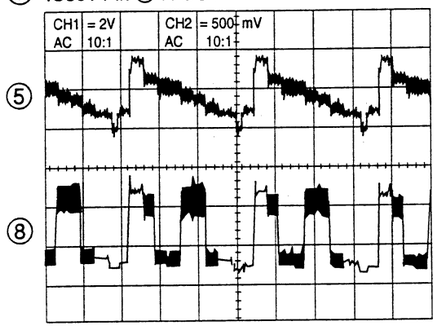
⑬ Q551 COLLECTOR R
⑭ Q552 COLLECTOR G



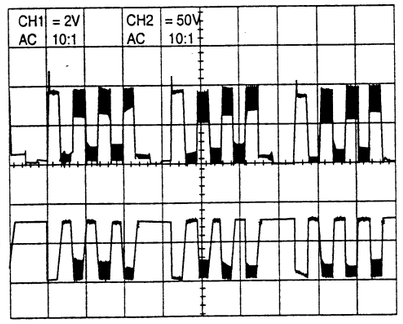
① Q451 Emitter SECAM TU IN
③ IC301 Pin ⑱ SECAM TU IN



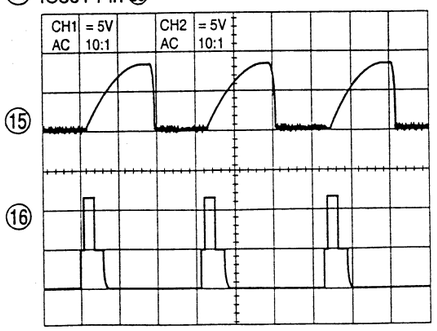
⑤ IC301 Pin ㊽ Y IN
⑧ IC301 Pin ㊶ R OUT



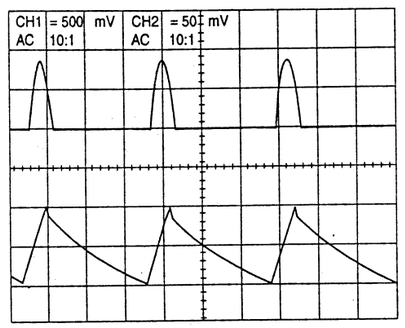
⑪ BT 301 Pin ③ B OUT
⑫ Q553 COLLECTOR B



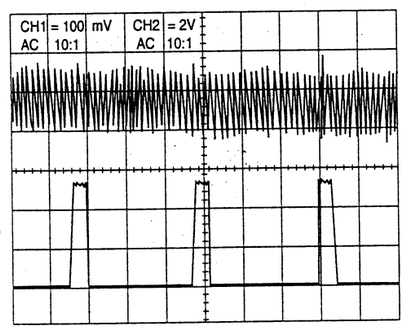
⑮ IC301 Pin ㉞
⑯ IC301 Pin ㉟



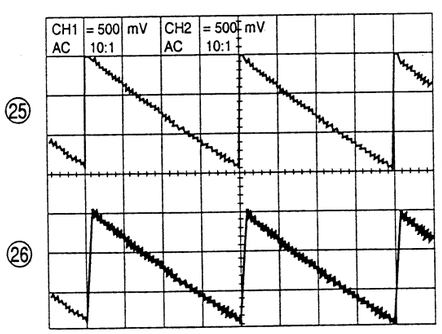
⑰ T602 PIN ② FBT AFC
⑱ IC301 Pin ㊳ AFC



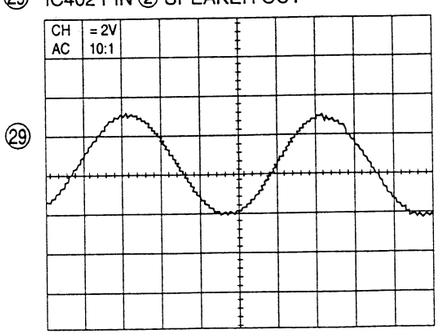
㉑ IC301 Pin ㊲ OSC
㉒ IC1 Pin ⑪ SD



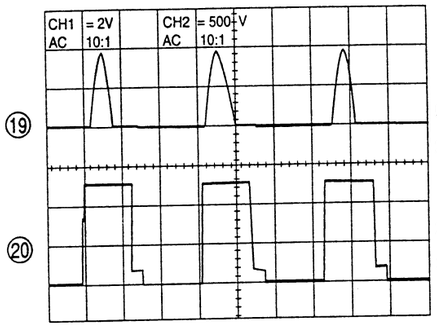
㉕ IC301 Pin ㉛ V RAMP
㉖ IC301 Pin ㉜ V NF



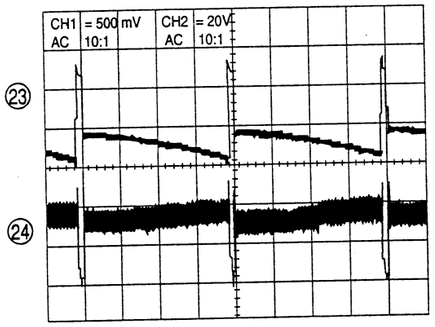
㉙ IC402 PIN ② SPEAKER OUT



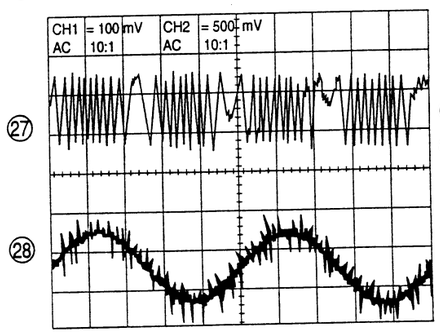
⑲ T602 Pin ⑩ HD
⑳ IC301 Pin ㊴ H OUT



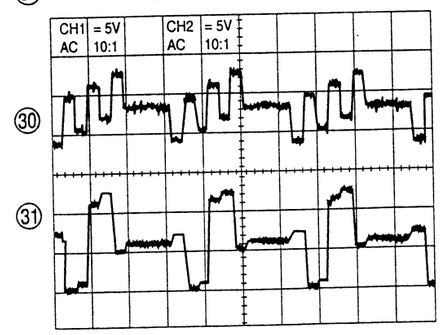
㉓ CN601 Pin ⑤ V+
㉔ IC301 Pin ㉙ V OUT



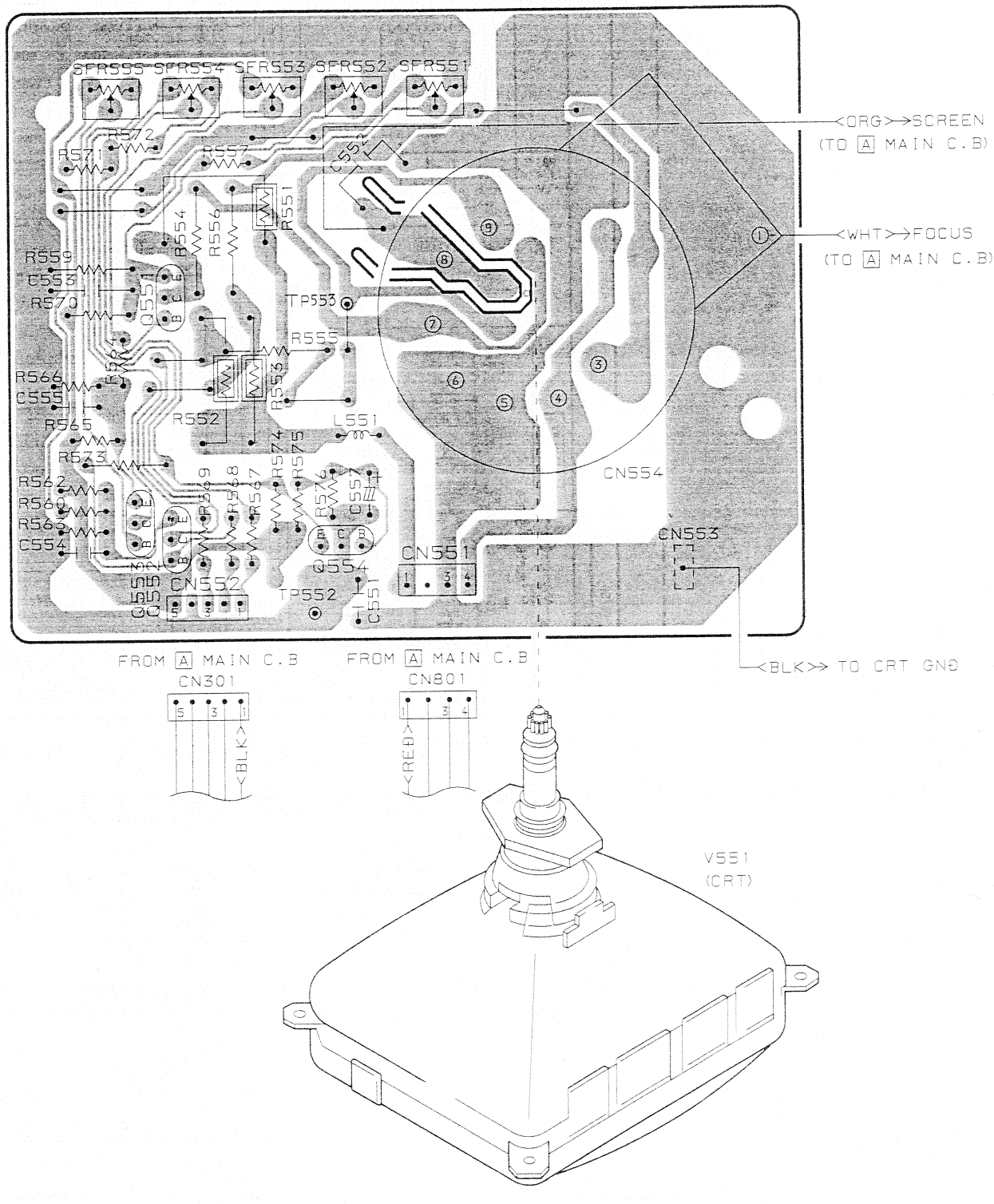
㉗ IC201 PIN ① SOUND 1KHz
㉘ Q208 Emitter Sound 1KHz



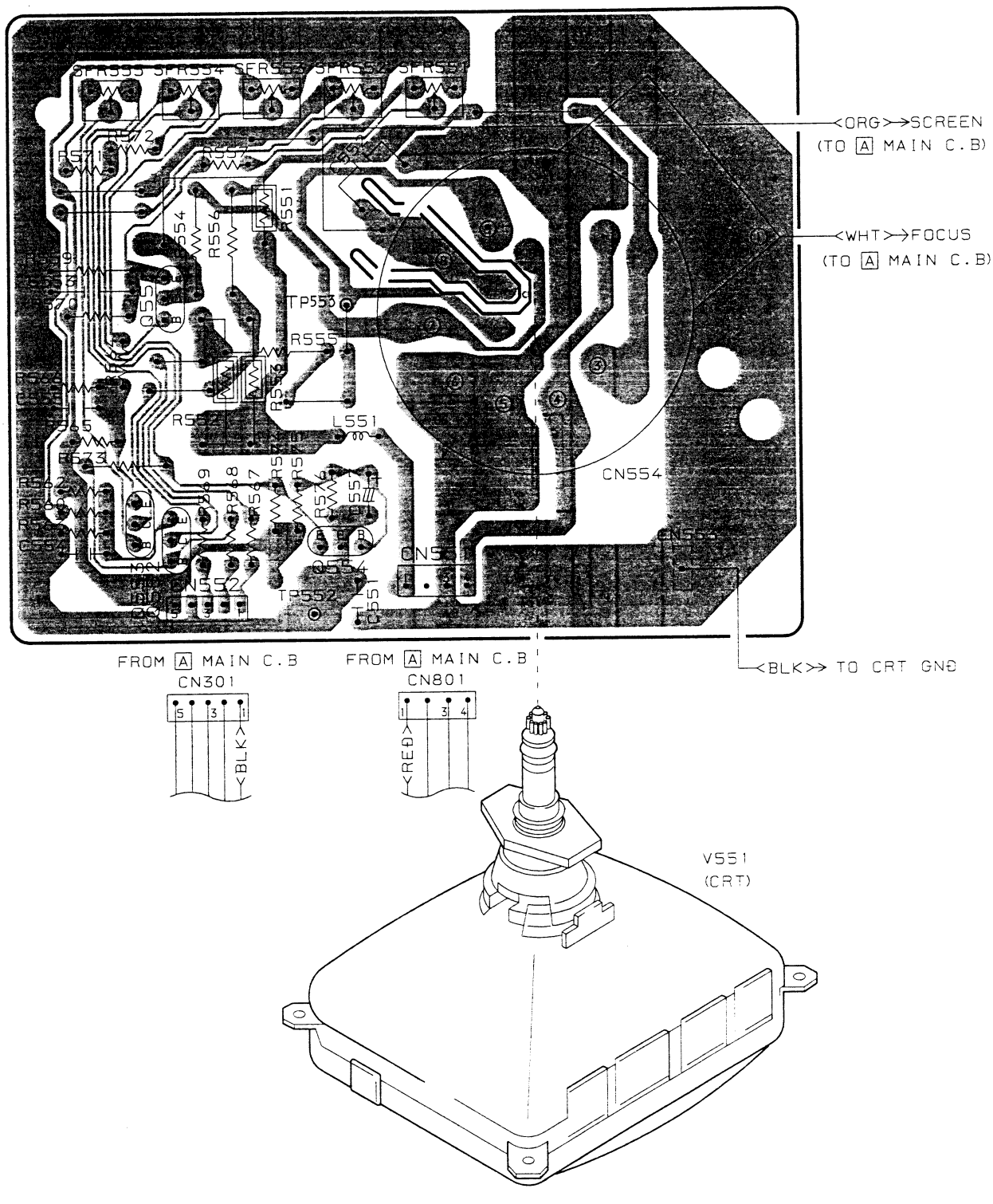
㉚ IC301 Pin ㊷ B-Y IN
㉛ IC301 Pin ㊵ R-Y IN



B NK C.B


SFR555 SFR554 SFR553 SFR552 SFR551
R572
R571
R557
C557
R551
R554
R556
R559
C553
R570
Q551
TP553
R555
R564
R566
C555
R553
R565
R552
L551
R573
R574
R575
R562
R560
R563
R568
R569
R567
C554
Q552
Q553
Q554
CN551
CN552
TP552
C551
CN554
CN553
<ORG>>SCREEN
(TO A MAIN C.B)
<WHT>>FOCUS
(TO A MAIN C.B)
<BLK>> TO CRT GND
FROM A MAIN C.B
CN301
<BLK>
FROM A MAIN C.B
CN801
<RED>
V551
(CRT)

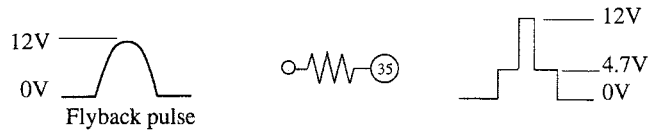
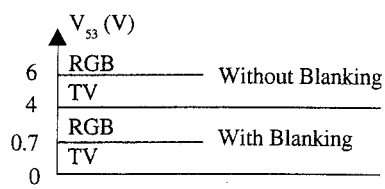
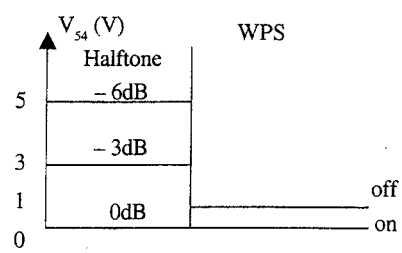
B NK C.B


SFR553 SFR554 SFR552 SFR551
R571
R572
R554
R551
TP553
R555
R552
L551
CN554
CN553
CN552
TP552
<ORG>>SCREEN
(TO A MAIN C.B)
<WHT>>FOCUS
(TO A MAIN C.B)
<BLK>> TO CRT GND
FROM A MAIN C.B
CN301
5 3 1
BLK
FROM A MAIN C.B
CN801
1 3 4
RED
V551
(CRT)

IC DESCRIPTION

IC, TA8759BN

Pin No.	Pin Name	I/O	Description
1,3	SR DEEMP	–	For the connection of a SECAM deemphasis filter.
2,64	R-Y/B-Y OUT	O	Color difference signal outputs.
4,5,8,9	SB,SR DET	–	For the connection of a SECAM detection tank coil.
6	VCC	–	VCC=12V (standard). Power supply of chroma circuits .
7	COLOR	I	Color control terminal. Goes "L" when the color killer operates.
10,11,21	SW1,2,3	I/O	Outputs an identification signal in the auto mode and receives a forced signal in the manual mode. See the logic table for the outputs in the auto mode. When current over 0.75mA (standard) flows to pin 11, an NTSC signal is not accepted. When current over 0.75mA (standard) flows to pin 21, killer is applied to the color-difference outputs and the RGB system is set to the color state. When pin 21 is set to "H" in the manual mode so the above switch is not tumed on, set it to 6.0V + / – 0.5V. (Do not connect to a power supply.)
12	DL IN	I	PAL /SECAM chroma 1H delayed signal input.
13	DC	–	DC bias of PAL/NTSC matrix circuit and SECAM permutator.
14	DL OUT	O	1H delay line PAL/SECAM chroma output.
15	TINT	I	Tint control terminal. Can be controlled in the NTSC mode. When the pin voltage is set to 2V or less, the TV can handle a teletext signal in the 312H/313H mode. Set to more than 2V when an ordinary TV/VCR signal is received.
16	ACC FIL	–	For the connection of an ACC detection filter.
17	DC F B	–	For the connection of a PAL/NTSC chroma amp DC feedback filter. The filter consists of resistors and extemally attached capacitors.
18	SECAM IN	I/O	SECAM chroma signal input. Connect to a bell filter. The filter consists of resistors and externally attached capacitors.
19	C GND	–	Ground of chroma circuits.
20	P/N IN	I	PAL/NTSC chroma signal input. This is used in common with a SECAM identification select switch.
22,23,27	P/S/N IDENT	–	For the connection of an identification filter. Pin 22:PAL identification. Pin 23:SECAM identification. Pin 27: NTSC identification.
24	S REF	–	For the connection of a resonance coil for SECAM identification. Tuned to 4.328 MHz. Adjust so that the DC voltage at the SECAM identification (pin 23) is maximum when a SECAM signal is received.
25	APC FIL	–	For the connection of an APC filter.
26,28	3.58/4.43 IN	–	Crystal oscillator are connected between these pins and pin 30 as color subcarrier oscillators. Connect a 3.58 MHz crystal to pin 26. Connect a 4.43 MHz crystal to pin28
29	VOUT	O	Vertical output terminal.
30	VCO OUT	O	Crystal oscillator are connected between this pin and pin 26 and 28 to form color subcarrier oscillators.
31	V RAMP	–	The externally attached capicitor is charged by the voltage determined by the zener diode during the vertical retrace period and is discharged with the time constant

Pin No.	Pin Name	I/O	Description
			determined by external resistors and capacitors during the scanning period to obtain a ramp waveform.
32	V NF	I	Vertical output AC/DC feedback terminal.
33	SYNC SEPA	I	Horizontal/vertical sync separator input. Apply a 2Vp-p video signal with negative sync via a filter.
34	G P TC	–	Connect time constant components to generate a gate pulse.
35	H BLK	I	Blanking pulse input. The pulse is shaped to apply blanking to the delay line drive, color difference outputs and RGB outputs and change the PAL switch. This is also used as a sync signal output. The masked sync signl is output in a period other than the input blanking pulse period and can be added to detect whether a signal is present, etc. 
36	AFC	–	For the connection of a filter for the horizontal AFC circuit.
37	H OSC	–	Forms a 32fH (503kHz) oscillator.
38	AFC	I	Forms a horizontal AFC circuit. Apply a sawtooth signal (2Vp-p) obtained by integrating the flyback pulses.
39	H OUT	O	Horizontal output with 42% duty and 5.1Vp-p (standard).
40	H VCC	–	H.VCC=9V (standard). Power supply of horizontal deflection circuit.
41-43	R/G/B OUT	O	Pin 41: R output, Pin 42: G output, pin 43: B output.
44-46	R/G/B CLAMP	–	For the connection of clamp capacitors. Pin 44: R, Pin 45: G, Pin 46: B.
47,49,51	R/G/B TX	I	External RGB signal inputs The signal level is 0.7Vp-p.
48	BRT	I	Brightness control terminal.
50	V/D GND	–	Ground of deflection and video systems.
52	X-RAY	I	Overvoltage protector circuit. The threshold is 1.3V (standard). If a voltage exceeding this is applied, the horizontal output terminal (pin 39) is set to "L".
53	TV/TX SW	I	Switch chamged between the TV and external RGB signals and for blanking. 
54	HALF TONE	I	Halftone switch. The threshold voltage is as follows. This pin is also used as a WPS (white peak supppressor) switch. Halftone / WPS off on. 

Pin No.	Pin Name	I/O	Description
55	SHARP	I	Picture control terminal. This is also used as a video muting terminal. When the voltage is 0.7V or less, the brightness (pin 48) is set to 3V for the TV mode.
56	PICT IN	I	Secondary differential signal input.
57	Y CLAMP	–	For the connection of a pedestal clamp capacitor.
58	Y IN	I	Video signal input terminal. Apply a video signal with negative sync.
59	CONSTRAST	I	Uni-color control. Controls the color gain as well as the video gain. This is also used as an extemal RGB contrast control.
60,62	R-Y/B-Y IN	I	Color difference signal input termial. Pin 60: R-Y input, Pin 62: B-Y input.
61	VCC	–	VCC=12V (standard). Power supply of video, chroma and deflection systems.
63	VCC	–	Power supply of RGB output circuit.

Logic Table in Auto Mode

Identification			Crystal mode	SW I	SW II	SW III	Discriminated mode
PAL	SECAM	NTSC		PIN 10	PIN 11	PIN 21	
PIN 22	PIN 23	PIN 27					
H	L	H	4.43	H	H	M	PAL
L	H	L	4.43	H	M	M	SECAM
L	L	H	4.43	L	H	M	4.43 NTSC
L	L	H	3.58	L	L	M	3.58 NTSC
L	L	L	4.43/3.58	L	M/L	L	B/W
H ⟶ VCC L = 6V			—	H = 6.0V (1/2VCC) M = 2.0V(1/16VCC) L = 0V (grounded with 30 kΩ), output from the IC.			—

Switch Input Voltages in Manual Mode

MODE	SW I	SW II	SW III
	PIN 10	PIN 11	PIN 21
PAL	H	H	H
SECAM	H	(M)	H
4.43 NTSC	(L)	H	H
33.58 NTSC	(L)	(L)	H

Set "H" to 6V ± 0.5V.
"L" to 0V.
The outputs in the parenthese ( ) are determined within the IC automatically when the remaining pins are set to "H".

IC, M37220M3-150SP

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1</td><td>$\overline{\text{HSYNC}}$</td><td>I</td><td>OSD horizontal synchronised signal input terminal. "L"= active.</td></tr>
<tr><td>2</td><td>$\overline{\text{VSYNC}}$</td><td>I</td><td>OSD vertical synchronised signal input terminal. "L"=active.</td></tr>
<tr><td>3</td><td>VOL</td><td>O</td><td>Volume control output. (Volume PWM 8 bit.)</td></tr>
<tr><td>4</td><td>CONT</td><td>O</td><td>Contrast control output. (Contrast PWM 8 bit.)</td></tr>
<tr><td>5</td><td>H–TONE</td><td>O</td><td>Brightness control output. (Brightness PWM 8 bit.)</td></tr>
<tr><td>6</td><td>COLOR</td><td>O</td><td>Color control output. (Color PWM 8 bit.)</td></tr>
<tr><td>7</td><td>TINT</td><td>O</td><td>Tint control output. (Tint PWM 8 bit.)</td></tr>
<tr><td>8</td><td>SHARP</td><td>O</td><td>Sharpness control output. (Sharpness PWM 8 bit.)</td></tr>
<tr><td>9</td><td>50/$\overline{60}$</td><td>O</td><td>Vertical scanning frequency input.</td></tr>
<tr><td>10</td><td>$\overline{\text{REMOCON}}$</td><td>I</td><td>Remote control signal is led to this pin.</td></tr>
<tr><td>11</td><td>$\overline{\text{SD}}$</td><td>I</td><td>Horizontal sync. detected input. The level of this pin will be sampled by µp to determine whether there is picture signal detected.</td></tr>
<tr><td>12</td><td>LED</td><td>O</td><td>During standby mode, "H" level is inserted to switch on standby LED.</td></tr>
<tr><td>13</td><td>POWER</td><td>O</td><td>During standby mode, "H" level is inserted to switch off horizontal deflection and high voltage.</td></tr>
<tr><td>14/15</td><td>LINE1/LINE2</td><td>O</td><td>Tuner/Line1/Line2 selection.
<table>
<tr><th>Pin 14</th><th>Pin 15</th><th>Input selection</th></tr>
<tr><td>H</td><td>L</td><td>Line 1</td></tr>
<tr><td>L</td><td>H</td><td>Line 2</td></tr>
<tr><td>L</td><td>L</td><td>Tuner</td></tr>
</table></td></tr>
<tr><td>16</td><td>VT</td><td>O</td><td>14 bits PWM output used to provide tuning voltage to tuner. During tuning, duty cycle of PWM will change.</td></tr>
<tr><td>17</td><td>SSYS1/SO1</td><td>O</td><td>Sound system selection.</td></tr>
<tr><td>18</td><td>CNVSS</td><td>–</td><td>Connected to ground.</td></tr>
<tr><td>19</td><td>XINT</td><td>I</td><td>8 MHz clock input.</td></tr>
<tr><td>20</td><td>XOUT</td><td>O</td><td>8 MHz clock output.</td></tr>
<tr><td>21</td><td>VSS</td><td>–</td><td>Connected to ground.</td></tr>
<tr><td>22</td><td>VCC</td><td>–</td><td>5 V supply.</td></tr>
<tr><td>23</td><td>NSTC</td><td>I</td><td>NTSC signal detection input.
"L" level when NTSC playback. Used by µp to decide whether tint can or cannot be adjusted.</td></tr>
<tr><td>24</td><td>BILING</td><td>I</td><td>Not used.</td></tr>
<tr><td>25</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>Used to reset the µp when power up.</td></tr>
<tr><td>26</td><td>EEPDATA</td><td>I/O</td><td>Data bus between E^2PROM and µp.</td></tr>
<tr><td>27</td><td>SSYS2/SO2</td><td>O</td><td>Sound system selection.(Not used.)</td></tr>
<tr><td>28</td><td>EEPCLK</td><td>O</td><td>Synchronizing clock between µp and E^2PROM provided by µp through this pin.</td></tr>
<tr><td>29</td><td>AFTV</td><td>I</td><td>AFT voltage from IC201 is received by µp during channel tuning.</td></tr>
<tr><td>30</td><td>KEY0</td><td>I</td><td>Input key is detected by monitor.</td></tr>
</table>

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>31,32,33</td><td>CSYS1/CSYS2/CSYS3</td><td>O</td><td>Color system setting.
<table>
<tr><td></td><td>AUTO</td><td>PAL</td><td>SECAM</td><td>NTSC 3.58</td><td>NTSC 4.43</td></tr>
<tr><td>Pin 31</td><td>H</td><td>L</td><td>L</td><td>H</td><td>H</td></tr>
<tr><td>Pin 32</td><td>H</td><td>L</td><td>H</td><td>H</td><td>L</td></tr>
<tr><td>Pin 33</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>34</td><td>AMUTE</td><td>O</td><td>Used to mute line out sound and picture when no input signal is detected.
"H" to mute.</td></tr>
<tr><td>35</td><td>TONE</td><td>O</td><td>Not used.</td></tr>
<tr><td>36,37</td><td>BAND1/BAND2</td><td>O</td><td>Selecting tuner receiving band.
<table>
<tr><td></td><td>Pin36</td><td>Pin37</td></tr>
<tr><td>VHF-L</td><td>L</td><td>H</td></tr>
<tr><td>VHF-H</td><td>H</td><td>L</td></tr>
<tr><td>UHF</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>38</td><td>SUR</td><td>O</td><td>Not used.</td></tr>
<tr><td>39</td><td>VMUTE</td><td>O</td><td>"H" to mute picture display on screen. Used when display OSD.</td></tr>
<tr><td>40</td><td>B(OSD)</td><td>O</td><td>OSD blue output.</td></tr>
<tr><td>41</td><td>G(OSD)</td><td>O</td><td>OSD green output.</td></tr>
<tr><td>42</td><td>R(OSD)</td><td>O</td><td>OSD red output.</td></tr>
</table>

VOLTAGE CHART

PAL 2CH COLOR BAR, AIR, VOL : 30, AC : 100

	VOLTAGE BY MODE		
REF NO.	STANDARD	SLEEP	STANDBY
Q3			
S	0.00	0.00	0.00
D	3.83	3.87	0.16
G	0.00	0.00	5.07
Q4			
S	0.00	0.00	0.00
D	11.40	11.35	0.07
G	0.00	0.00	0.00
Q6			
S	0.00	0.00	0.00
D	11.44	11.42	0.00
G	0.00	0.00	5.08
Q7			
S	0.00	0.00	0.00
D	11.39	11.34	0.05
G	0.00	0.00	0.00
Q10			
S	0.00	0.00	0.00
D	0.00	0.00	4.64
G	2.09	2.09	0.00
Q11			
E	0.00	0.00	0.00
C	5.04	4.97	5.00
B	0.00	0.00	0.00
Q12			
S	0.00	0.00	0.00
D	0.02	0.01	0.00
G	5.08	5.08	5.08
Q13			
S	0.00	0.00	0.00
D	0.02	0.02	0.01
G	5.08	5.08	5.08
Q14			
S	0.00	0.00	0.00
D	0.02	0.02	0.00
G	5.08	5.08	5.08
Q15			
E	5.24	5.24	0.19
C	0.00	0.00	0.00
B	4.60	4.60	0.00

	VOLTAGE BY MODE		
REF NO.	STANDARD	SLEEP	STANDBY
Q16			
E	5.25	5.24	0.18
C	0.00	0.00	0.00
B	5.99	5.99	0.09
Q101			
S	0.00	0.00	0.00
D	1.66	1.66	1.48
G	4.62	4.62	4.62
Q102			
E	0.00	0.00	0.00
C	4.16	4.17	0.02
B	0.65	0.65	0.05
Q104			
S	0.00	0.00	0.00
D	0.11	0.11	0.00
G	5.08	5.08	5.08
Q105			
S	0.00	0.00	0.00
D	8.97	8.97	0.00
G	0.00	0.00	0.00
Q205			
E	2.95	2.95	0.00
C	0.00	0.00	0.00
B	2.22	2.31	0.00
Q207			
E	2.41	2.11	0.00
C	9.11	9.11	0.00
B	2.98	3.10	0.00
Q208			
E	4.00	4.00	0.00
C	0.00	0.00	0.00
B	3.36	3.36	0.00
Q301			
E	5.46	5.46	0.08
C	10.97	10.98	0.02
B	0.95	0.94	0.00
Q302			
E	11.95	11.95	0.19
C	1.46	1.46	0.00
B	11.85	11.85	0.18

	VOLTAGE BY MODE		
REF NO.	STANDARD	SLEEP	STANDBY
Q309			
S	7.91	7.91	0.00
D	7.95	7.95	0.00
G	0.00	0.00	0.00
Q310			
E	0.00	0.00	0.00
C	0.00	0.00	0.00
B	0.62	0.62	-0.02
Q311			
E	0.00	0.00	0.00
C	11.85	11.86	0.19
B	0.00	0.00	0.00
Q312			
E	3.15	3.15	0.00
C	11.97	11.96	0.19
B	3.97	3.98	0.08
Q314			
S	3.41mV	3.11mV	0.16mV
D	3.43mV	3.10mV	0.15mV
G	2.36mV	2.14mV	0.18mV
Q315			
S	0.00	0.00	0.00
D	5.04	5.04	0.48
G	0.00	0.00	0.00
Q319			
S	0.00	0.00	0.00
D	0.00	0.00	0.00
G	4.91	4.83	4.19
Q401			
S	0.00	0.00	0.00
D	12.14	11.87	5.05
G	0.00	0.00	5.05
Q402			
E	11.52	11.38	8.49
C	13.60	11.34	14.09
B	12.14	12.01	0.05
Q451			
E	7.72	7.70	0.16
C	0.00	0.00	0.00
B	7.10	7.09	0.18

REF NO.	STANDARD	SLEEP	STANDBY
Q453			
E	7.76	7.77	0.19
C	0.00	0.00	0.00
B	7.12	7.13	0.18
Q454			
E	3.41	3.41	0.00
C	11.97	11.98	0.18
B	4.01	4.01	0.07
Q455			
E	3.40	3.40	0.00
C	11.97	11.96	0.18
B	4.01	4.01	0.03
Q501			
E	0.00	0.00	0.00
C	4.89	4.89	5.08
B	0.06	0.06	0.00
Q502			
S	0.00	0.00	0.00
D	4.31	4.31	0.11
G	0.00	0.00	0.00
Q601			
E	0.00	0.00	0.00
C	69.70	69.70	114.7
B	0.39	0.39	0.00
Q602			
E	0.00	0.00	0.00
C	124.9	125.2	114.8
B	-0.07	-0.08	0.00
Q603			
E	0.00	0.00	0.00
C	4.09	4.09	5.08
B	0.02	0.01	0.00
Q604			
S	0.00	0.00	0.00
D	8.76	8.76	0.22
G	0.00	0.00	5.05
Q605			
E	0.00	0.00	0.00
C	-0.07	-0.07	0.00
B	-0.36	-0.37	0.63
Q801			
E	6.99	6.94	6.84
C	14.6	14.4	13.8
B	7.58	7.54	7.43

REF NO.	STANDARD	SLEEP	STANDBY
Q803			
1	114.1	114.2	114.8
2	103.5	102.1	92.3
3	0.00	0.00	0.00
Q551			
E	2.81	2.56	0.04
C	163.7	177.7	114.2
B	3.17	2.93	0.19
Q552			
E	2.73	2.51	0.03
C	158.8	171.2	114.3
B	3.18	2.94	0.19
Q553			
E	2.67	2.45	0.03
C	153.0	185.6	114.2
B	3.15	2.93	0.18
Q554			
E	3.07	3.06	0.18
C	0.01	0.01	0.00
B	3.09	3.08	0.19
IC1			
1	4.09	4.09	5.08
2	4.88	4.89	5.08
3	3.40	3.39	0.00
4	3.13	0.84	0.00
5	2.17	1.09	0.00
6	1.54	1.51	0.02
7	3.46	3.43	0.04
8	1.84	1.83	0.03
9	5.04	4.99	0.00
10	5.02	5.04	5.05
11	0.62	0.62	0.00
12	0.00	0.00	5.08
13	0.00	0.00	5.05
14	0.00	0.00	0.00
15	0.00	0.00	0.00
16	4.62	4.62	4.62
17	5.05	5.05	5.06
18	0.00	0.00	0.00
19	2.23	2.23	2.23
20	2.17	2.17	2.17
21	0.00	0.00	0.00
22	5.08	5.08	5.08
23	4.91	4.83	4.20

REF NO.	STANDARD	SLEEP	STANDBY
24	0.00	0.00	0.00
25	5.02	5.03	5.03
26	5.05	4.98	5.03
27	0.00	0.00	0.00
28	5.07	5.08	5.08
29	2.01	2.30	0.00
30	5.07	5.07	5.07
31	5.08	5.08	0.00
32	5.08	5.08	5.08
33	5.07	5.08	5.08
34	0.00	0.00	5.08
35	0.00	0.00	0.00
36	0.00	0.00	0.00
37	5.08	5.08	5.08
38	0.00	0.00	0.00
39	0.00	0.00	0.00
40	0.00	0.00	0.00
41	0.00	0.00	0.00
42	0.00	0.00	0.00
IC2			
1	5.08	5.08	5.08
2	0.00	0.00	0.00
3	5.02	5.03	5.03
IC3			
1	0.00	0.00	0.00
2	0.00	0.00	0.00
3	0.00	0.00	0.00
4	0.00	0.00	0.00
5	5.04	4.98	5.03
6	5.06	5.07	5.07
7	0.00	0.00	0.00
8	5.06	5.07	5.07
IC4			
1	5.04	5.03	5.04
2	5.06	5.06	5.07
3	0.00	0.00	0.00
IC101			
1	32.65	32.64	32.64
2	0.00	0.00	0.00
IC201			
1	2.09	2.07	0.00
2	2.24	2.25	0.10
3	7.67	7.67	0.00
4	8.31	8.30	0.00

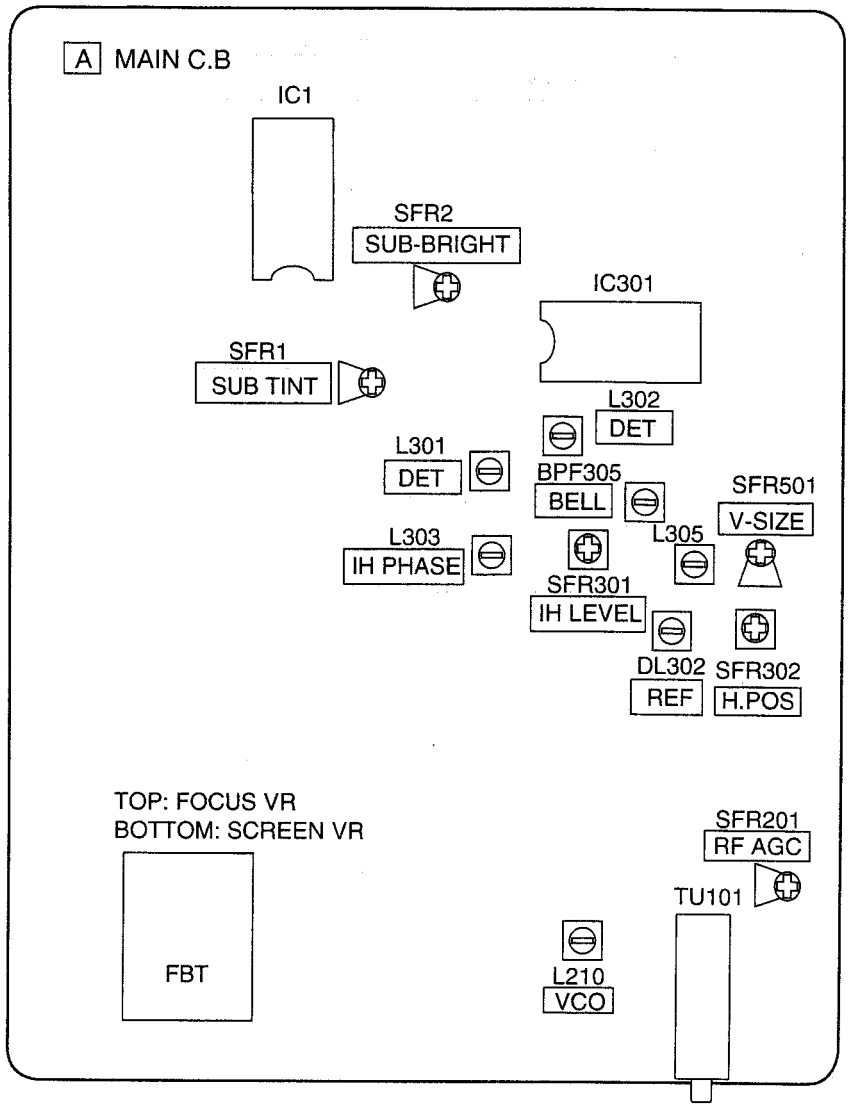
REF NO.	STANDARD	SLEEP	STANDBY
5	9.11	9.10	0.00
6	2.30	2.30	0.00
7	2.04	2.03	0.00
8	1.70	1.70	0.00
9	3.03	3.02	0.00
10	1.70	1.70	0.00
11	8.78	8.78	0.00
12	8.79	8.79	0.00
13	6.41	5.87	0.00
14	4.49	4.50	0.00
15	1.70	1.70	0.00
16	1.58	1.54	0.00
17	2.81	2.81	0.00
18	3.63	3.62	0.00
19	3.62	3.63	0.00
20	0.00	0.00	0.00
21	1.71	1.71	0.00
22	2.57	2.56	0.00
23	2.95	2.96	0.10
24	3.31	3.31	0.00
IC301			
1	8.52	8.52	0.00
2	7.95	7.95	0.00
3	8.51	8.51	0.00
4	6.56	6.56	0.10
5	6.57	6.57	0.10
6	11.98	11.97	0.20
7	3.32	3.31	0.00
8	6.56	6.56	0.10
9	6.56	6.56	0.10
10	6.00	6.00	0.75
11	5.97	5.97	0.00
12	5.21	5.21	0.00
13	5.21	5.21	0.00
14	7.69	7.69	0.00
15	6.14	6.14	0.05
16	10.53	10.53	0.18
17	3.52	3.52	0.00
18	4.46	4.46	0.00
19	0.00	0.00	0.00
20	4.95	4.95	0.00
21	2.09	2.09	0.00
22	11.36	11.36	0.00
23	5.44	5.44	0.00

REF NO.	STANDARD	SLEEP	STANDBY
23	5.44	5.44	0.00
24	5.85	5.85	0.00
25	4.88	4.88	0.00
26	3.28	3.28	0.00
27	10.96	10.96	0.00
28	3.28	3.28	0.00
29	0.82	0.82	0.00
30	8.29	8.29	0.10
31	6.64	6.64	0.00
32	6.60	6.60	0.30
33	6.56	6.56	0.00
34	3.42	3.42	0.20
35	0.93	0.93	0.00
36	7.35	7.35	0.20
37	5.39	5.39	0.08
38	6.61	6.61	0.00
39	2.10	2.10	0.00
40	8.78	8.78	0.20
41	3.24	2.83	0.18
42	3.26	2.84	0.18
43	3.21	2.81	0.18
44	4.93	4.93	0.00
45	5.00	5.02	0.00
46	4.89	4.90	0.00
47	7.08	6.86	0.00
48	2.89	2.76	0.05
49	7.16	7.03	0.00
50	0.00	0.00	0.00
51	7.18	7.02	0.00
52	0.00	0.00	0.00
53	0.00	0.00	0.00
54	2.16	2.16	0.00
55	6.18	6.18	0.10
56	3.21	3.21	0.00
57	5.94	5.96	0.00
58	4.79	4.79	0.00
59	3.46	2.88	0.06
60	6.06	6.06	0.00
61	12.00	12.00	0.19
62	6.06	6.06	0.00
63	12.00	12.00	0.19
64	7.93	7.93	0.00
IC401			
1	12.02	11.98	0.19

REF NO.	STANDARD	SLEEP	STANDBY
2	3.58	3.58	0.00
3	2.94	2.94	0.00
4	2.93	2.93	0.00
5	0.00	0.00	0.00
6	2.83	2.83	0.09
7	2.90	2.91	0.00
8	3.58	3.57	0.00
9	6.39	6.39	0.10
IC402			
1	11.12	11.04	8.22
2	6.17	6.13	4.44
3	11.65	11.56	8.48
4	6.23	6.19	4.72
5	0.48	0.48	0.55
6	0.00	0.00	0.00
7	0.00	0.00	0.00
8	0.48	0.48	0.55
9	0.00	0.00	0.00
10	6.04	6.00	4.27
11	11.13	11.03	8.17
12	13.66	13.55	14.08
IC403			
1	4.00	4.00	0.00
2	4.03	4.02	0.00
3	4.00	4.00	0.10
4	4.00	4.00	0.00
5	4.03	4.01	0.00
6	0.00	0.00	0.00
7	0.00	0.00	0.00
8	0.00	0.00	0.00
9	11.39	11.34	0.00
10	11.39	11.34	0.00
11	4.00	4.00	0.00
12	4.00	4.00	0.00
13	4.00	4.00	0.10
14	4.03	4.03	0.00
15	4.02	4.02	0.00
16	11.44	11.44	0.00
IC451			
1	7.10	7.11	0.04
2	11.39	11.34	0.06
3	11.39	11.35	0.05
4	4.15	4.15	0.39
5	0.00	0.00	0.00

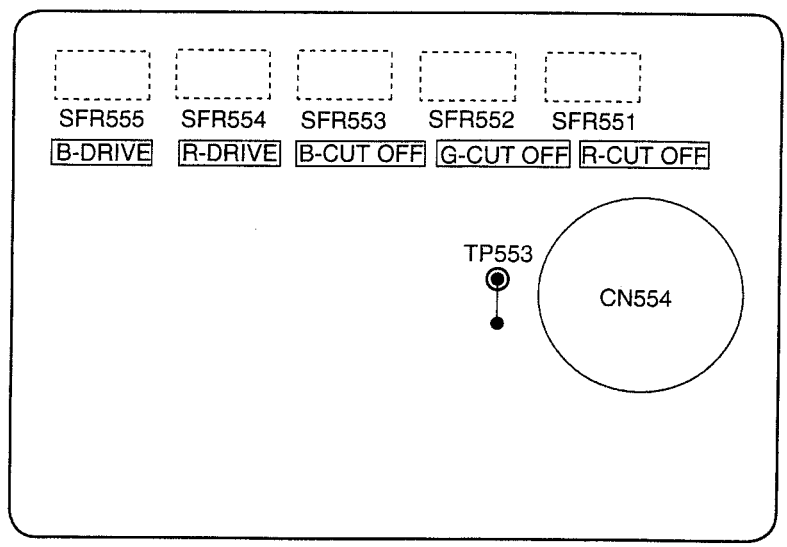
REF NO.	STANDARD	SLEEP	STANDBY
6	3.86	3.87	0.01
7	11.96	11.96	0.18
8	3.87	3.87	0.10
9	4.01	4.30	0.10
IC452			
1	0.51	0.54	0.42
2	0.51	0.54	0.57
3	7.08	7.03	0.21
4	7.09	7.05	0.21
5	11.42	11.43	0.00
6	11.42	11.42	0.00
7	0.00	0.00	0.00
8	4.00	4.00	0.00
9	4.00	4.00	0.17
10	4.00	4.01	0.10
11	4.00	4.01	0.16
12	11.42	11.42	0.00
13	11.39	11.36	0.06
14	11.45	11.45	0.06
IC501			
1	0.00	0.00	0.00
2	13.60	13.58	0.64
3	24.65	24.75	1.13
4	0.80	0.78	0.00
5	0.65	0.66	0.08
6	24.53	24.62	0.76
7	1.44	1.43	0.10
IC801			
1	133.3	136.7	143.8
2	0.20	0.00	0.00
3	0.30	0.20	-0.10
4	1.00	0.90	0.30
5	2.70	2.50	0.10
6	0.00	0.00	0.00
7	0.30	0.40	0.20
8	0.80	0.80	0.60
9	7.00	7.00	6.90
IC804			
1	14.90	15.00	0.30
2	0.00	0.00	0.00
3	12.0	12.0	0.20
IC805			
1	9.10	9.10	0.00
2	0.00	0.00	0.00

REF NO.	STANDARD	SLEEP	STANDBY
3	12.00	12.00	0.10
IC806			
1	5.10	5.10	5.10
2	0.00	0.00	0.00
3	14.1	14.0	14.1
TU101			
1	4.30	4.30	0.00
2	1.60	1.60	1.60
3	-	-	-
4	9.00	9.00	0.00
5	0.00	0.00	0.00
6	9.00	9.00	0.00
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-
11	0.00	0.00	0.00
PS802			
1	104.2	102.9	93.6
2	103.5	102.0	92.70
3	0.37	0.38	0.62
4	3.86	3.84	3.78



MAIN (TV) Circuit Board (Component Side)

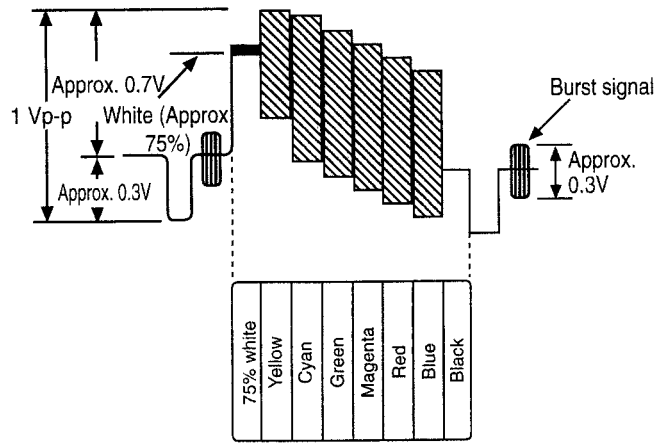
B NK C.B



NK Circuit Board (Solder Side)

Because the video signal output from a pattern generator is used as the adjustment signal input during adjustment, the video signal output from the pattern generator must conform with the specifications. Measure the output waveform across 75 Ω load. Confirm that the synchronizing signal has an amplitude of about 0.3 V, the video Signal portion has an amplitude of about 0.7 V and the burst signal has an amplitude of about 0.3 V with flat envelope. Confirm that ratio of the burst signal amplitude and the red signal amplitude is 0.30 : 0.66. If the output signal does not conform with the specifications, calibrate the pattern generator. (Refer to pattern generator operation manual.) Use the LEADER: LCG 404 for the pattern generator.

Color bar signal of a pattern generator



TV display

Precautions before starting adjustment

Satisfy the following setting conditions before starting adjustment.

- Allow warm-up of 20 minutes or longer. (Do not turn off during warm-up.)
- Set all picture quality controls of users' setting to initial set-up, unless otherwise specified. (refer to Table 1)
- Set the pattern generator's output level at 1.0Vp-p (across 75Ω load).

POSITION	BRIGHT	CONTRAST	SHARPNESS	COLOR
NORMAL	32	54	32	32
CINEMA	32	48	16	32
GAME	32	32	16	32
DIMMER	16	16	32	32

Table 1

Table 1 (Initial image quality setting)

1. CRT Adjustment

1-1. Precautions

(1) Receive the white raster signal, and then perform edging for at least 20 minutes.
(2) Demagnetize the area surrounding the CRT with a degausser before making adjustments.
(3) Set the picture quality for each mode to the factory setting.
(4) Position the front screen facing to the east as much as possible.

1-2 Purpose

(1) Beam landing adjustment (purity magnet)

Set the left/right balance of beam landing. If there is a discrepancy in this adjustment, a color irregularity will occur. After completion of the landing adjustment, it is necessary to perform a convergence adjustment.

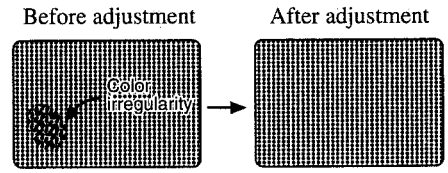
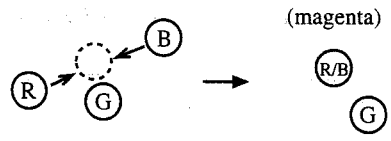


Fig. 1-1

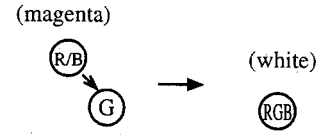
(2) Beam convergence adjustment (4-pole magnet)

Align the R beam with the B beam. The G beam does not move with this adjustment.



Align the R beam with the B beam
Fig. 1-2

(3) Beam convergence adjustment (6-pole magnet)
With a 4-pole magnet align the G beam with the already aligned R/B beam.



Align the G beam with the R/B beam
Fig. 1-3

(4) The composition of each magnet is as appears in Fig. 1-4.

In making adjustments, rotate the lock ring clockwise (looking from the CRT's back screen) and disengage.
Be careful not to loose the lock ring too much. If the magnet assembly has become shifted during adjustments, secure it to the position in Fig. 1-4.

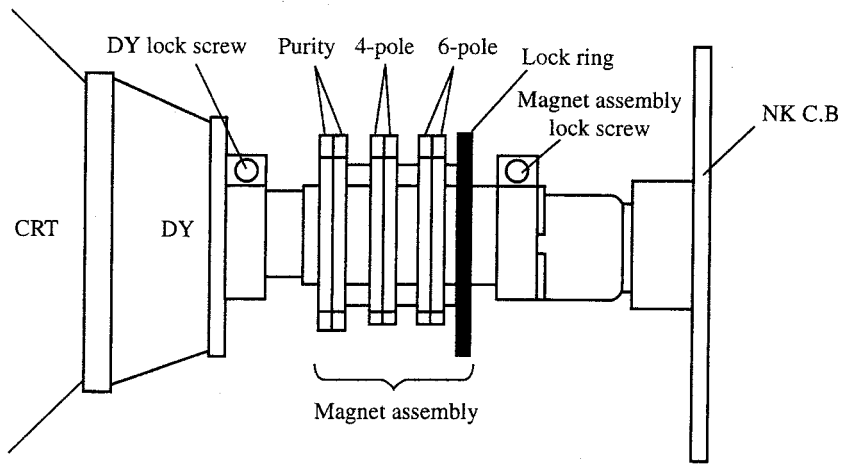


Fig 1-4

1-3. Beam Landing Adjustment

(1) Receive the green raster signal through the pattern generator.
(2) Loosen the magnet lock screw, and shift the magnet assembly backward (toward the neck).
(3) Loosen the DY lock screw, and shift the DY deflecting yoke backward (toward the neck).
(4) After opening the two purity magnets to the same angle, adjust the color width of the bands on both sides of the screen so that they are of equal width. (refer to Fig. 1-5 (a)).

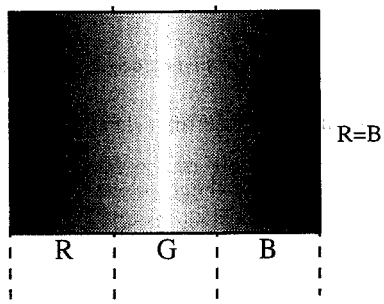


Fig 1-5 (a)

As shown in Fig. 1-5 (b), the purity magnet functions in relation to the electron beam.

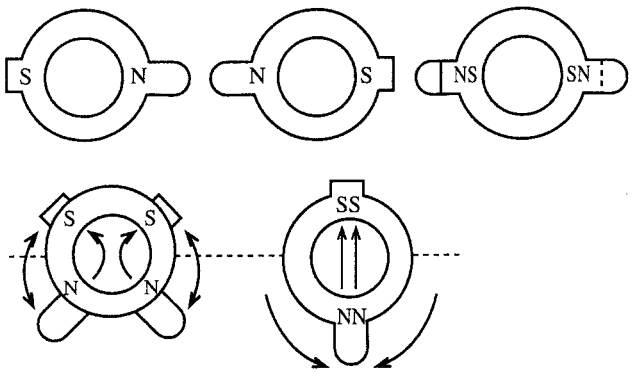


Fig 1-5 (b)

(5) Gradually shift the deflecting yoke toward the front (toward the CRT funnel). Stop movement at the point when the screen has become completely green.
(6) Also, verify the respective monochromatics of red and blue.
(7) While looking at the screen, adjust the tilt of the deflecting yoke and tighten the DY lock screw.
(8) Shift the magnet assembly to the front (toward the CRT funnel), stop movement before the adjustment position and then tighten the magnet lock screw.
At this time, be careful not to shift the position of the purity magnet.

※ As there is occurrence of convergence distortion after completing the landing adjustments, be certain to carry out convergence adjustments.

※ If the color irregularity in the screen's corner section are not improved, correct them with the landing magnet. After using the landing magnet, be sure to demagnetize the CRT with degausser and verify that there is no occurrence of color irregularity. (refer to Fig. 1-6)

Landing magnet: 81-JTI-710-010
(two-sided adhesive tape) : 80-XVI-218-010 Cushion

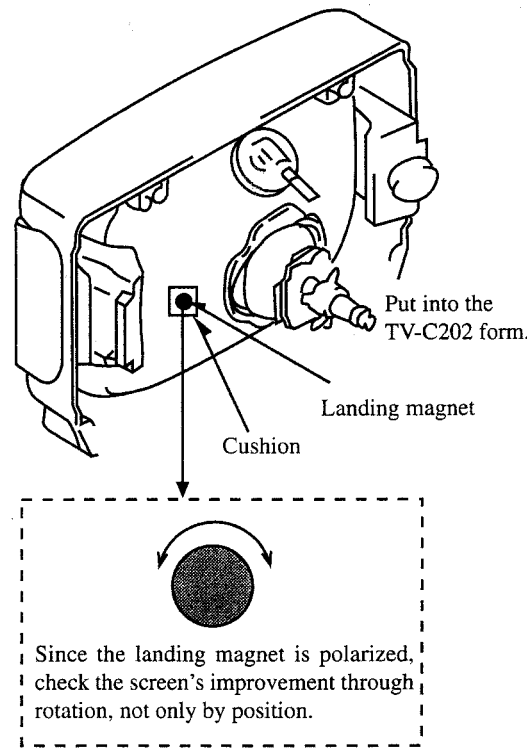

Put into the
TV-C202 form.
Landing magnet
Cushion
Since the landing magnet is polarized, check the screen's improvement through rotation, not only by position.

Fig 1-6

1-4. Beam Center Convergence Adjustment

Make adjustments on the convergence with 4-pole and 6-pole magnets. Operate each magnet in relation to the electron beam as shown in Figs. 1-7 and 1-8. When performing this adjustment, verify whether there is distortion in the focus adjustment. If necessary, carry out adjustments again.

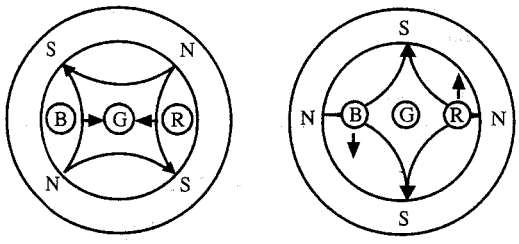


Fig 1-7

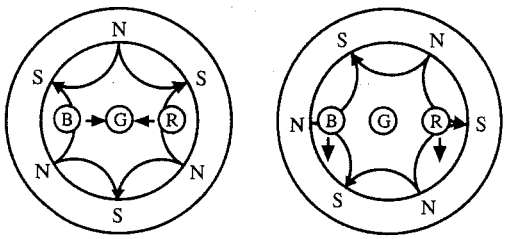


Fig 1-8

In Fig. 1-7, two 4-pole magnets are stacked together so as to be of the same polarity. Move the B and R beams to their respective direction, by rotating the two 4-pole magnets together. By adjusting the opening of the two magnets, it is possible to adjust the amount of the beam's movement.

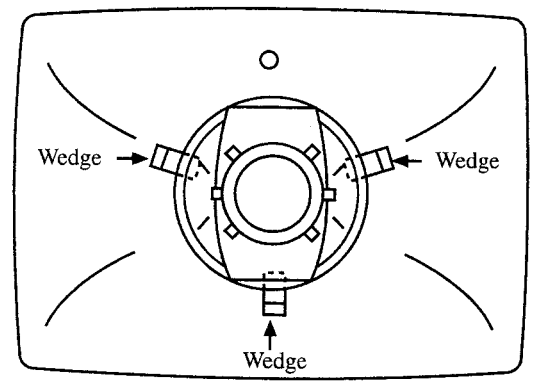
In Fig. 1-8, the two 6-pole magnets are stacked together so as to be of the same polarity. Move the B and R beams to their respective direction, by rotating the two 6-pole magnets together. By adjusting the opening of the two magnets, it is possible to adjust the amount of the beam's movement.

(1) Receive the dot pattern signal through the pattern generator.
(2) Pay attention to the center of the screen, and perform adjustments with two 4-pole magnets so that the R beam and the B beam perfectly align and become a magenta color. (refer to Fig. 1-2)
(3) In the same way, pay attention to the screen, and perform adjustments with a 6-pole magnet so that the magenta beam and the G beam align and become a white dot. (refer to Fig. 1-3)
(4) After adjustments are completed, secure all magnets with the lock link. (Refer to Fig. 1-4)

1-5. The Surrounding Convergence Adjustment

Make this adjustment after completion of adjustment 1-4.

(1) Shake the deflecting yoke up, down, right and left, and adjust any discrepancies in the screen's surroundings.
(2) Insert wedges in three locations in the gap between the deflecting yoke and the surface of the CRT funnel in order to secure the deflecting yoke. (refer to Fig. 1-9)



Position of wedge

Fig. 1-9

2. ELECTRICAL ADJUSTMENT

2-1. Screen Adjustment

(1) Short the IC501 Pin 1 and Pin 4 and set the screen in single horizontal line.
(2) Set the TV to the external input mode (no input).
(3) Connect an oscilloscope to CN554 Pin 9 (on the NK C.B.).
(4) Adjust SFR 2 (Sub-bright) so the voltage at CN554 Pin 9 is 170 ± 5V DC. (See Figure 2-1)
(5) Adjust the SCREEN VR (FBT) so that a horizontal line begins to appear at the center of the screen.
(6) Release the short-circuit point.

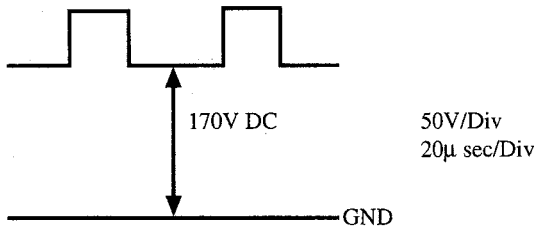


Fig 2-1

* Be sure to perform the sub-bright adjustment after completing this adjustment.

2-2. White Balance Adjustment (NK C.B.)

(1) Receive a PAL raster signal (white).
(2) Set the customer picture controls "bright" and "contrast" to minimum.
(3) Set the CUT OFF SFR (SFR551, SFR552, SFR553) and DRIVE SFR (SFR554, SFR555) to their mechanical centers.
(4) Leaves the CUT OFF SFR of the color which is brightest on the screen as it is and use other two CUT OFF SFR to adjust the white balance.
(5) Set the customer picture controls "brightness" and "contrast" to maximum.
(6) Turn SFR554 (R DRIVE) fully counterclockwise so the whole screen becomes red.
(7) Turn SFR554 (R DRIVE) gradually clockwise and stop it where red disappears from the screen.
(8) Turn SFR555 (B DRIVE) fully counterclockwise so the whole screen becomes blue.
(9) TurnSFR555 (B DRIVE) gradually clockwise and stop it where blue disappears from the screen.
(10) Repeat steps (1)-(4) and (5)-(9) until the white balance has been adjusted completey.
(11) Return the customer picture controls to their original positions.
(12) Receive a stairstep signal (color bar with chroma off) and check that there is no unnatural color at any bands.

* Perform 2-3 Sub-bright adjustment after completing the white balance adjustment.

2-3. Sub-bright Adjustment

(1) Receive a PAL stairstep signal (color bar with chroma off).
(2) Adjust SFR2 so the band next to the right end start to light. (See Figure 2-2)

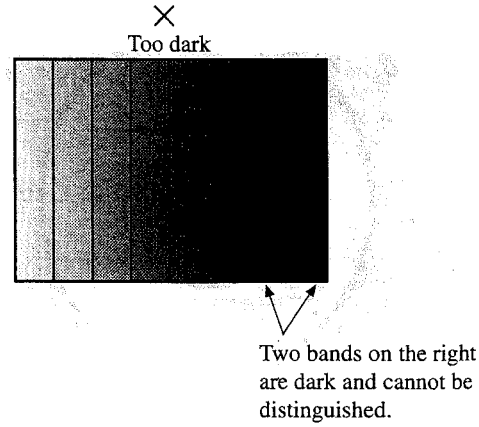

×
Too dark
Two bands on the right are dark and cannot be distinguished.
○
Good example
The band on the right end is not lit and the adjecant band is very dim.
×
Too bright
The band on the right end is lit.

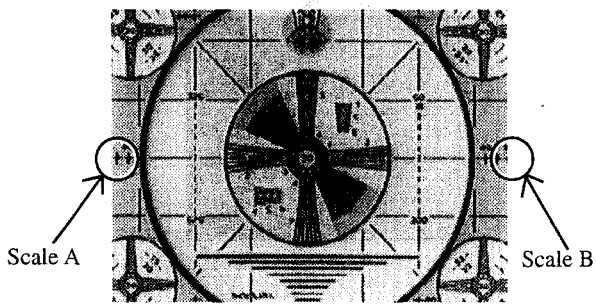
Fig 2-2

2-4. Focus Adjustment

(1) Receive a PAL dot pattern signal.
(2) Adjust the FOCUS SFR (FBT) so the focus of the dots is optimum.

2-5. Horizontal Position Adjustment

(1) Input the following signals.
Monoscope signal of the test tape TTV-06T (connect video)
(2) As is shown in Fig. 2-3, make adjustments with SFR 302 so that the scales on both sides of the screen are the same.



Scale A = Scale B

Fig 2-3

2-6. Vertical Size Adjustment

(1) Input the monoscopic signal of the test tape TTV-06T. (connect video)
(2) Make adjustments with SFR 501 so that the upper and lower scales on the monoscope screen have the numerical values that appear below. (refer to Fig. 2-4 (a))

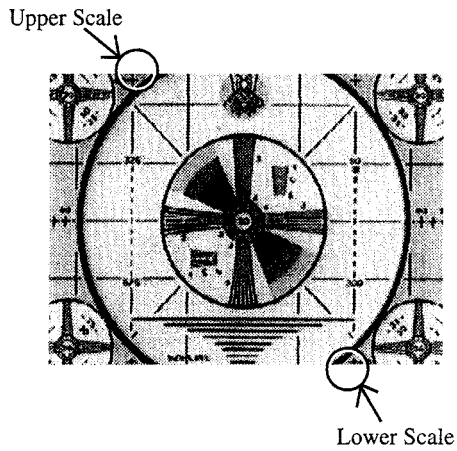


Fig 2-4 (a)

(Simple Adjustment Method)

(1) Using LEADER LCG-404, input the cross hatch signal.
(2) As is shown in Fig. 2-4 (b), make adjustments with SFR 501 so that the number of vertical squares is 13.

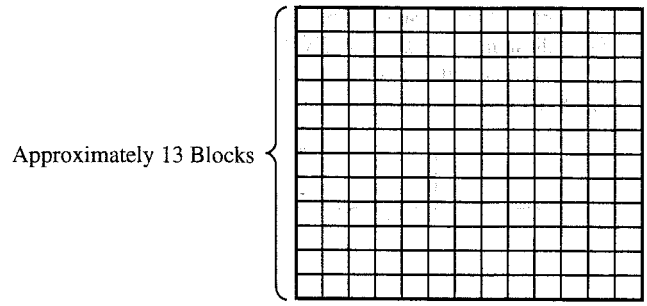


Fig. 2-4 (b)

2-7. Sub-tint Adjustment

(1) Receive an NTSC 3.58 MHz color bar signal.
(2) Connect an oscilloscope to Q553. Collector (on the NK C.B).
(3) Adjust SFR1 so the bottom edges of the waveform fall on one line. (See figure 2-5)

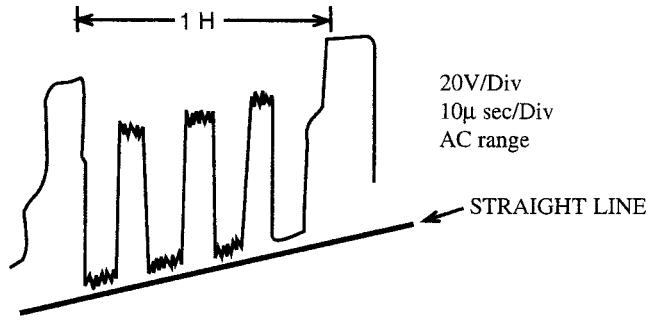


Fig. 2-5

2-8. AGC Adjustment

(1) Receive a PAL signal under the following conditions.
Input level: 60 dBμ
Modulation percentage: 87.5%
Received channel : CCIR CH E12
(2) Adjust SFR201 so the voltage at the TU101 Pin1 is 6.0V ± 0.2VDC.

(Simple Adjustment Method)

(1) Using the LEADER LCG-404 (65dBμ), receive the color bar signal on channel 12.
(2) With SPR 201, make adjustments so that the voltage of TU101 pin 1 becomes 3.6VDC.
(3) Receive a television broadcast, and verify that the screen is clear.

2-9. PAL DELAY Adjustment

(1) Receive a PAL DEM pattern signal.
(2) Connect the oscilloscope to IC301 Pin 60.
(3) Adjust SFR301 and L303 several times alternately so the Ⓐ and Ⓑ components are minimum. (See Figure 2-6).

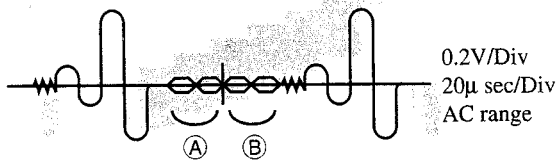


Fig. 2-6

(Simple Adjustment Method)

(1) Input the PAL color bar signal.
(2) Connect the oscilloscope to the IC301 Pin 60.
(3) Make adjustments with SFR 301 so that amplitude becomes 1.3Vp-p. Also, with L303 make adjustments so that the distortion in the waveforms becomes decreased. (Refer to Fig. 2-7)

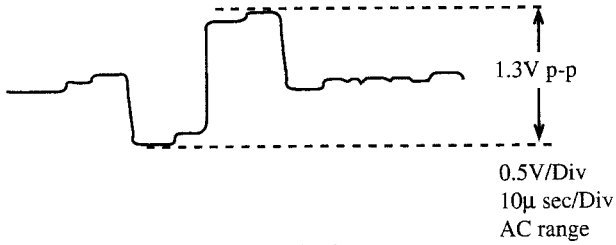


Fig. 2-7

2-10. SECAM Reference Coil Adjustment

(1) Receive a SECAM color bar signal.
(2) Connect a DC voltmeter to IC301 Pin 23.
(3) Adjust L305 so the DC voltage is maximum (more than 10V).

2-11. SECAM Detector Coil Adjustment

(1) Receive a SECAM color bar signal.
(2) Connect an oscilloscope to IC301 Pin 60.
(3) R-Y adjustment
Adjust L302 so the amplitude from black to white in periods Ⓐ and Ⓒ is the same as that of the sync signal as shown in Figure 2-8.

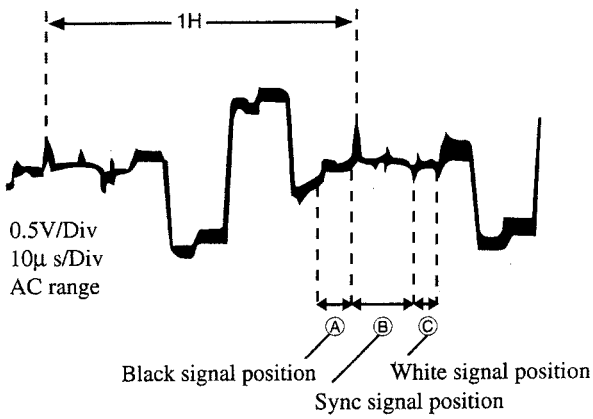


Fig. 2-8

(4) Connect the oscilloscope to IC301 Pin 62.
(5) B-Y adjustment
Adjust L301 so the amplitude from black to white in periods Ⓐ and Ⓒ is the same as that of the sync signal as shown in Figure 2-9.

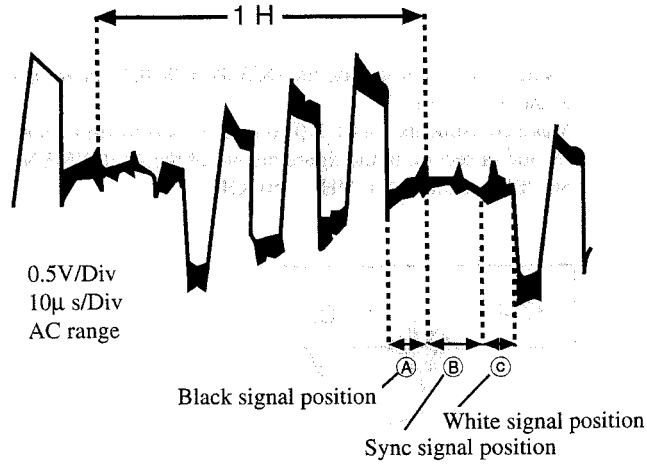


Fig 2-9

2-12. 4.43 MHz Trap Adjustment

(1) Receive a PAL color bar signal.
(2) Connect an oscilloscope to IC301 pin 58.
(3) Adjust DL302 to minimize 4.43 MHz chroma components. (See Figure 2-10)

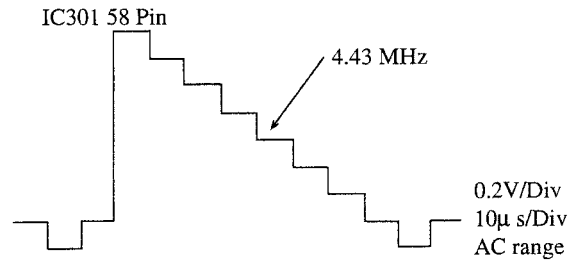


Fig 2-10

2-13. Bell Filter Adjustment

(1) Receive a SECAM magenta signal.
(2) Connect an oscilloscope to IC301 pin 18.
(Trigger IC301 Pin 33 or C329 ⊕ side)
(3) Make adjustments with the BPF305 so that the two waveforms overlap on the same level. (Refer to Fig 2-11)

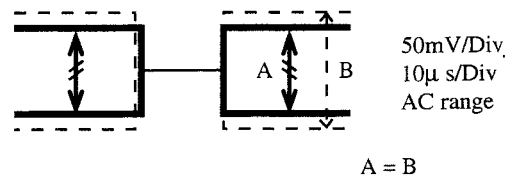
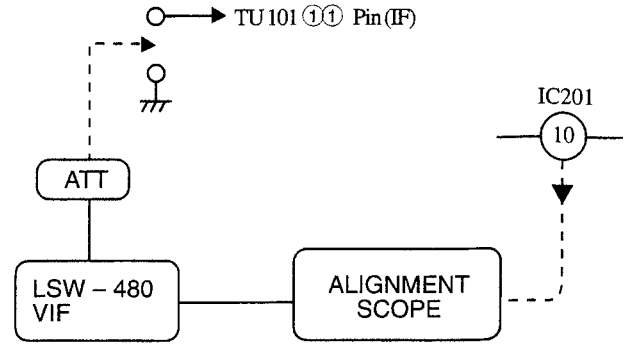


Fig 2-11

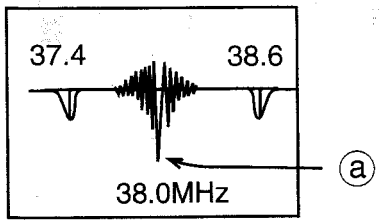
2-14. VCO (AFT) Adjustment

(Rough Adjustment)

(1) Make connections as they appear below.

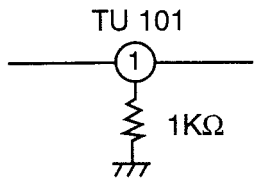


(2) Using a DC power supply, add DC3.0V ± DC0.2V of voltage to the IC 201 Pin 17.
(3) Make adjustments with L210 so that the waveform's center section (a section in the figure below) of the ALIGNMENT SCOPE becomes 38.0 MHz ± 50 KHz.



(Fine Adjustment)

(1) Connect the resistance of 1 KΩ between the TU101 Pin 1 and the GND.



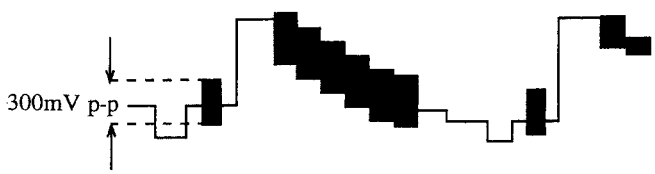
(2) Input the following signal conditions to the TU101 Pin 1. (AM/FM SSG)

CARRIER	38.0 MHz
LEVEL	100 dB μ
MOD	OFF

(3) Make adjustments with L210 so that the voltage of the IC201 Pin13 is DC5.0V ± DC0.2V.
(4) Remove resistance (1 KΩ).

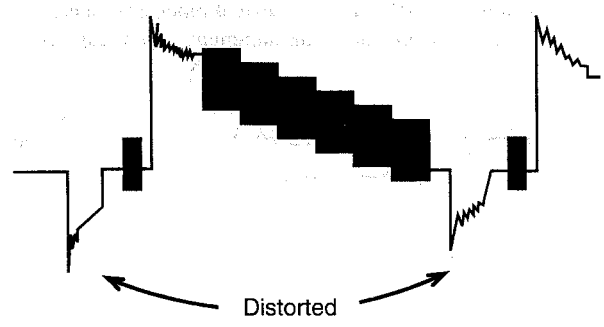
(Simple Adjustment Method)

(1) Using the pattern generator LCG-404, receive the signal for channel 3 (55.25 MHz).
(2) Connect an oscilloscope to the IC201 Pin10.
(3) Make adjustments with L210 so that the amplitude of the burst signal section of the image signal becomes 300m Vp-p.



Note: When the tuner preset is not carried out properly, the horizontal synchronizing signal becomes distorted in the manner of the waveforms in the figure below. In a situation like this, carry out the tuner preset once more.
After signals are received correctly, perform the simple adjustment mentioned above.

< Incorrect example >



1. How To Activate / Release Service Mode

Test mode is activated by pressing TEST key (Hidden Key). (Refer to Fig.1).

When the Test Mode is activated, below menu (refer to Fig.2) will be shown.

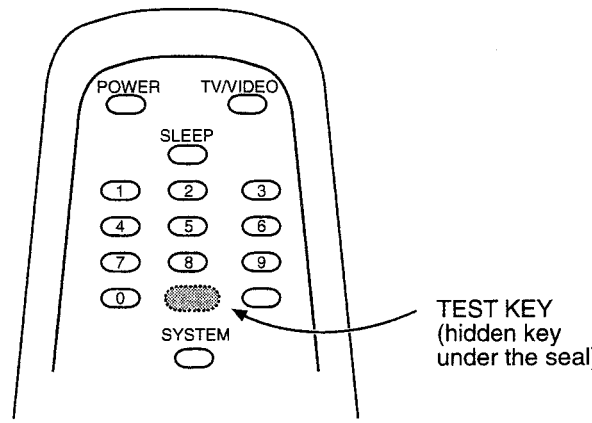


Fig. 1

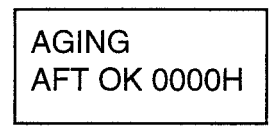


Fig. 2

Test mode is released by pressing TEST KEY again.

<JIG remote control unit>
JIG remote control unit to operate the service mode should be used with the remote control unit for TV-C142 (RC-6VT06, 86-LB4-951-010)

2. Content of Service Mode.

Test mode have the following function.
① Function for releasing Auto Power OFF
② Display AFT S curb status.
③ Display the product Hours of CRT ON.

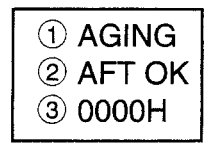


Fig. 3

① Release the function of Auto Power OFF.
It releases the function of Auto Power OFF when no input occurs.

It is used for warming up (Aging) of CRT Adjustment.

② Display of AFT S curb.
It displays OK, UP, DN in the status of AFT S curb.
(Observe the Voltage of IC201 Pin ⑬)

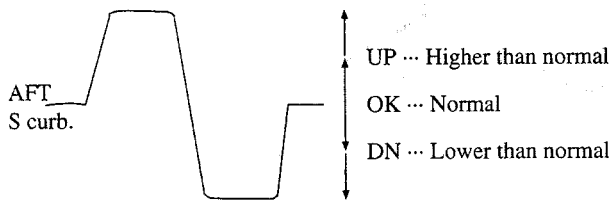
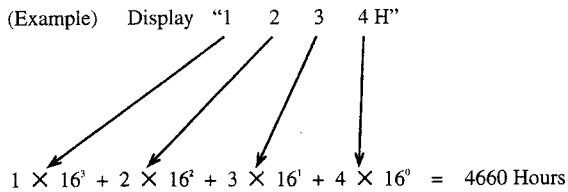


Fig. 4

③ Display the product hours of CRT ON.
It product hours of CRT ON at onr hour interval count up by (HEX).

Display is 4 digits in HEX.
The product hours is connected to the decimal scale number from the displayed number.

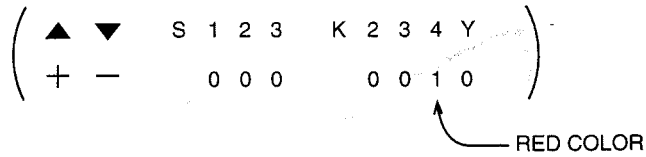


❋ When it exceeds 7FFF H (32768 hours), it will reflect to 0000 H again.

Precautions to replace EEPROM

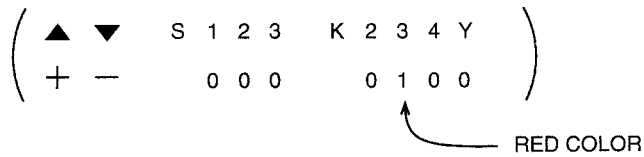
When replacing the EEPROM (IC3, AT24C02), be certain to follow the sequence appearing below to carry out initialization.

1. Press " TEST " key (hidden key) on the remote control unit to activate the Service Mode. (Refer to Fig. 1)
2. Press " DISPLAY " key on the remote control unit and verify that the screen is the same as in Fig. 2.
3. Press " CHANNEL ▼ ▲ " key on the remote control unit and then move the red color to K4.
4. Press "VOLUME +" key, on the remote control unit set the data



on the screen as below.

5. In the same sequence as in step 3 and 4, move the cusor to K3.



Then set the display data as below.

6. With conditions as they are in step 5, press the "DISPLAY" key and then press the "FINISH key (hidden key)". (refer to Fig. 1)
7. Following the display of "INITIAL" on the screen for a few seconds, the power will automatically go off.

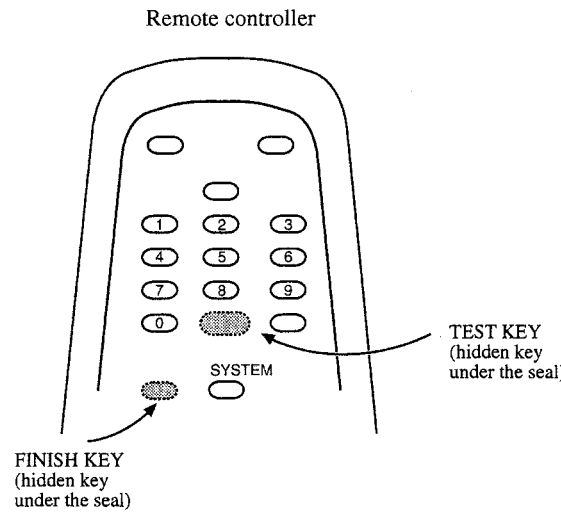


Fig. 1

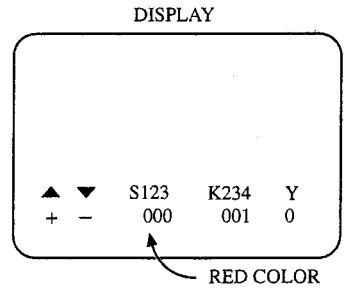
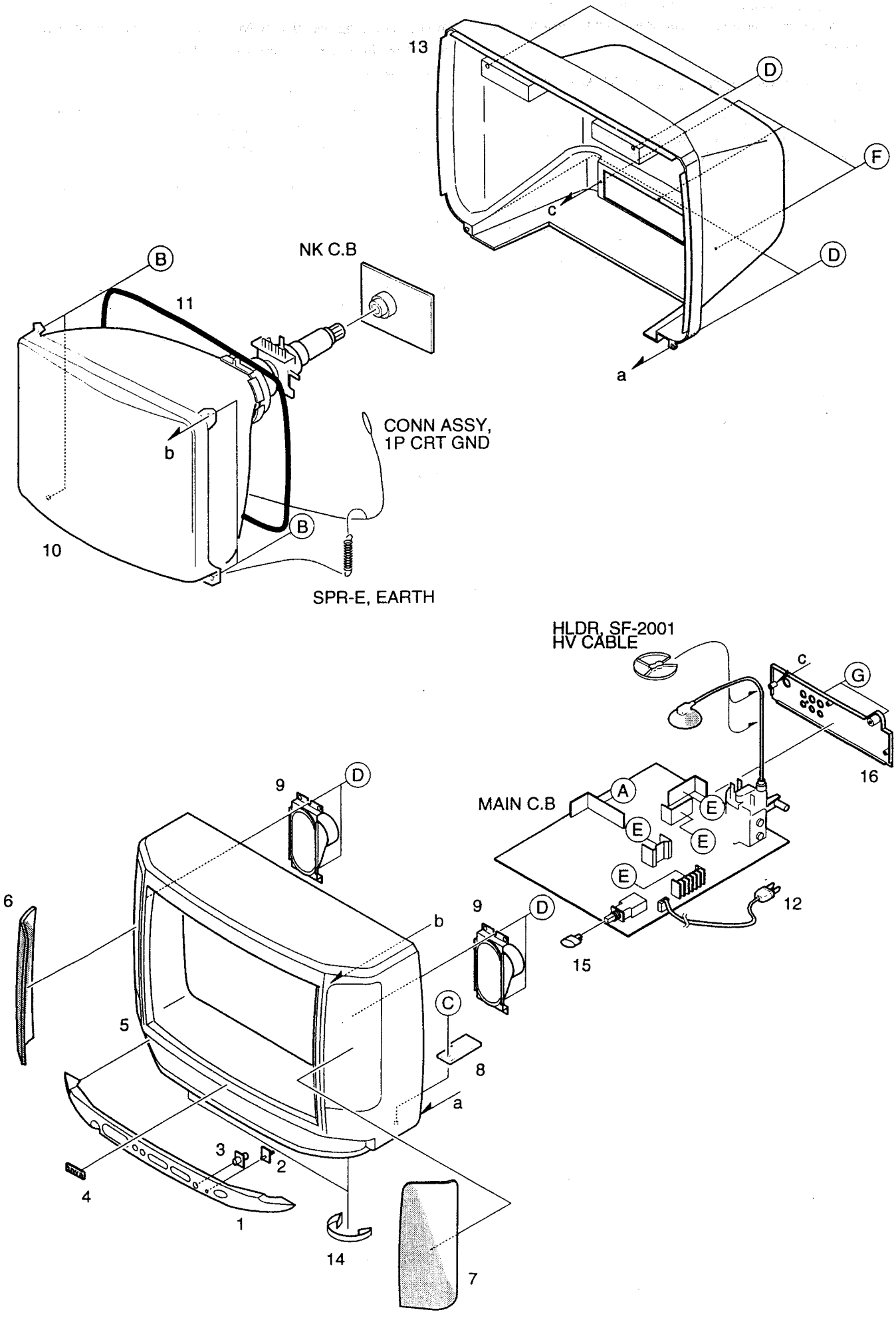


Fig. 2

MECHANICAL EXPLODED VIEW 1/1



MECHANICAL PARTS LIST 1 / 1

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	86-LB2-006-010		PANEL,FR
2	86-LB2-007-010		LENS,LED
3	86-LB2-008-010		LENS,RC
4	87-054-086-010		BADGE,AIWA 52.5 ABS GLD
5	86-LB2-002-010		CABI,FR
6	86-LB2-003-010		GRILLE,SPKR L
7	86-LB2-004-010		GRILLE,SPKR R
8	86-LBU-201-010		HLDR,AC CORD
9	86-LBT-620-010		SPKR,F 45 8OHM 3W
⚠ 10	86-LB2-601-010		CRT,A51KST93X(VM)
⚠ 11	84-LB2-616-010		COIL,GDC 20 PAL
⚠ 12	84-LB7-694-010		AC CORD SET,KE2 ALK
13	86-LB2-005-010		CABI,REAR
14	84-LB2-020-010		PLATE,FOOT KE
15	86-LB2-009-010		KEY,POWER
16	86-LB2-010-010		PANEL,REAR
A	87-067-584-010		BVT2+3-6 W/O SLOT
B	87-078-140-010		S-SCREW,ASSY+5-40
C	87-067-758-010		BVT2+3-12 W/O SLOT
D	87-067-844-010		BVT2+4-16 BLK
E	87-067-680-010		BVIT3B+3-10
F	87-B10-071-010		BVT2+3-16 W/O SLOT
G	87-067-761-010		BVT2+3-10 BLK

ACCESSORIES / PACKAGE LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	86-LB2-903-010		IB,A215/205/145 KER(ERAP)-P<KEJ1NP>
1	86-LB2-901-010		IB,A215/205/145 KER(ERAP)-M<KEJ1NM>
2	86-LB2-951-010		RC UNIT,RC-6VT053
3	86-LB7-641-010		ANT ASSY,TV5 SEC.(PAL)

REFERENCE NAME LIST

ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER

MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL

サービス技術ニュース	
番号	連絡内容
G— —	
G— —	
G— —	

アイワ株式会社
AIWA CO.,LTD.

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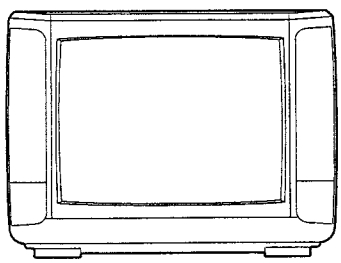
aiwa SERVICE

TV-A215



COLOR TELEVISION

SERVICE MANUAL

• TYPE: KE

SUPPLEMENT

SPECIFICATIONS

Category
Color television
Broadcasting color system
PAL (B/G, D/K), SECAM (B/G, D/K, K1)
Television color system (Video input)
PAL, SECAM, NTSC3.58, NTSC4.43, PAL60
Receivable channel

BAND	CHANNEL
VHF	E2- E12 (WEST EUROPE)
	R1-R12 (EAST EUROPE)
	1-9 (IVORY COAST)
	S1-S20 (OSCAR CABLE CH)
	S21-S23 (HYPER CABLE CH)
UHF	E21-E69 (EUROPE)
	S24-S41 (HYPER CABLE CH)

Aerial Input
75 ohms, unbalanced
Picture Tube
21"
Screen size
460(W) x 508(D) x 305(H)mm
(16 x 20 x 12 1/8 in.)

Video Input/Output
1 Vp-p, 75 ohms
Audio Input
0.5 Vrms., 33 kohms more
Audio Output
0.5 Vrms., 2.2 kohms less
Speaker
103 x 45 mm (4 1/8 x 11 3/16 in.) oval
Operating Voltage
100 – 240 VAC, 50/60 Hz
Power Consumption
TV-215: 95W
Headphone jack
Stereo-mini jack
Operating temperature
5°C – 40°C
Operating humidity
35% – 80%
Dimensions
580(W) x 491(D) x 425(H)mm
(22 7/8 x 19 3/8 x 16 3/4 in.)
Weight
22 kg (48.4 lbs.)

• Design and specifications are subject to change without notice.

• This Service Manual contains information about the difference between TV-A215 (KEJ1K1AM, KEJ1K1BM) and TV-A215 (KEJ1NP, KEJ1NM). If requiring other information, see Service Manual of TV-A215 (KEJ1NP, KEJ1NM), S/M Code No. 09-974-182-4FP. 2327 #1017166

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ELECTRICAL MAIN PARTS LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC			
	86-LB7-621-010		IC,M37220M3-150SP
	87-A20-611-080		IC,M51943BSL-700A
	87-A21-062-010		IC,M24C02-BN6
	87-A90-864-010		RCR UNIT,SBX1981-72M
	87-A20-371-080		IC,KA33V
	87-A20-436-010		IC,LA7565N
	87-070-080-010		IC,TA8759BN
	87-017-356-010		IC,UPC1406HA
	87-001-485-010		IC,TA8207K
	87-027-666-010		IC,TC4052BP
	87-002-779-010		IC,LA7956
	87-027-656-010		IC,TC4066BP
	87-070-237-010		IC,LA7832
	87-A20-517-010		IC,STR-S6707
	87-A20-525-010		IC,KIA7812PI
	87-A20-364-010		IC,KIA7809PI
	87-020-881-080		IC,NJM78L05A
⚠	87-001-132-080		PROTECTOR,IC ICP-N38
TRANSISTOR			
	87-A30-090-080		FET,2SK2541
	87-A30-065-080		TR,2SC2785FE
	87-A30-066-080		TR,2SA1175FE
	89-342-174-510		TR,2SC4217(D/E)
	89-334-674-580		TR,2SC3467(D/E)
	87-A30-095-010		TR,2SD2333
	89-320-610-080		TR,2SC2061
	87-A30-041-010		TR,SE115N
DIODE			
	87-A40-291-080		DIODE,1N4148M (CPT)
	87-A40-349-080		ZENER,MTZJ7.5C
	87-A40-001-080		ZENER,MTZJ12C
	87-A40-235-080		ZENER,MTZJ9.1C
	87-A40-004-080		ZENER,MTZJ16A
	87-070-092-080		DIODE,S5566B
	87-017-963-080		DIODE,TVR5G
⚠	87-A40-371-010		DIODE,D3SBA60-4101
⚠	87-070-111-060		DIODE,RU30A
	87-017-354-080		DIODE,RU3
MAIN C.B			
BPF201	87-A90-337-010		FLTR,SAW OFW-K2959M
BPF305	84-LB3-622-010		FLTR,BELL 2 S-10E
BT301	84-LB2-631-010		CONN ASSY,5P TN-4
C1	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C2	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C3	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C4	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C5	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C6	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C7	87-018-123-080		CAP,TC U 220P-50 K B UP050
C9	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C10	87-015-975-010		CAP,E 220-6.3 M SR
C11	87-016-637-080		CAP,E 10-50 M SSL
C12	87-018-119-080		CAP,TC U 100P-50 K B UP050
C13	87-016-629-080		CAP,E 0.1-50 M SSL
C14	87-016-637-080		CAP,E 10-50 M SSL
C16	87-018-109-080		CAP,TC U 22P-50 J SL UP050
C17	87-018-119-080		CAP,TC U 100P-50 K B UP050
C18	87-018-119-080		CAP,TC U 100P-50 K B UP050
C19	87-018-119-080		CAP,TC U 100P-50 K B UP050
C23	87-016-634-080		CAP,E 2.2-50 M SSL
C25	87-016-636-080		CAP,E 4.7-50 M SSL
C26	87-016-636-080		CAP,E 4.7-50 M SSL
C27	87-016-633-080		CAP,E 1-50 M SSL
C28	87-016-636-080		CAP,E 4.7-50 M SSL
C29	87-016-636-080		CAP,E 4.7-50 M SSL
C30	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C40	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C101	87-016-633-080		CAP,E 1-50 M SSL
C102	87-016-583-080		CAP,E 100-25 M SSL
C103	87-A10-207-080		CAP,TC U 0.01-50 K B UP050
C212	87-016-633-080		CAP,E 1-50 M SSL
C213	87-016-583-080		CAP,E 100-25 M SSL
C214	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C218	87-018-133-080		CAP,TC U 4700P-16 N X UP050
C219	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C221	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C222	87-018-121-080		CAP,TC U 150P-50 K B UP050
C223	87-016-633-080		CAP,E 1-50 M SSL
C225	87-018-119-080		CAP,TC U 100P-50 J B UP050
C301	87-018-122-080		CAP,TC U 180P-50 K B UP050
C302	87-018-122-080		CAP,TC U 180P-50 K B UP050
C303	87-018-122-080		CAP,TC U 180P-50 K B UP050
C307	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C309	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C310	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C311	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C312	87-016-632-080		CAP,E 0.47-50 M SSL
C313	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C314	87-018-122-080		CAP,TC U 180P-50 K B UP050
C315	87-018-107-080		CAP,TC U 18P-50 J SL UP050
C316	87-018-131-080		CAP,TC U 1000P-50 K B UP050
C320	87-010-529-080		CAP,E 1-50 M BP
C327	87-016-575-080		CAP,E 220-16 M SSL
C328	87-018-195-080		CAP,TC U 1200P-16 M X UP050
C329	87-016-633-080		CAP,E 1-50 M SSL
C330	87-018-124-080		CAP,TC U 270P-50 K B UP050
C332	87-016-635-080		CAP,E 3.3-50 M SSL
C335	87-016-627-080		CAP,E 47-16 M SSL
C336	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C344	87-016-632-080		CAP,E 0.47-50 M SSL
C348	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C349	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C350	87-018-123-080		CAP,TC U 220P-50 K B UP050
C351	87-016-633-080		CAP,E 1-50 M SSL
C352	87-016-633-080		CAP,E 1-50 M SSL
C354	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C356	87-018-122-080		CAP,TC U 180P-50 K B UP050
C372	87-016-636-080		CAP,E 4.7-50 SSL
C373	87-018-115-080		CAP,TC U 47P-50 J SL UP050
C374	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C375	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C376	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C377	87-016-582-080		CAP,E 47-25 M SSL
C378	87-016-633-080		CAP,E 1-50 M SSL
C399	87-018-209-080		CAP,TC U 0.1-50 Z F UP050
C403	87-016-583-080		CAP,E 100-25 M SSL
C404	87-016-633-080		CAP,E 1-50 M SSL
C405	87-016-633-080		CAP,E 1-50 M SSL
C406	87-016-633-080		CAP,E 1-50 M SSL
C407	87-016-633-080		CAP,E 1-50 M SSL
C409	87-016-638-080		CAP,E 22-50 M SSL
C410	87-016-583-080		CAP,E 100-25 M SSL
C411	87-016-583-080		CAP,E 100-25 M SSL
C413	87-016-582-080		CAP,E 47-25 M SSL
C414	87-016-582-080		CAP,E 47-25 M SSL
C415	87-010-529-080		CAP,E 1-50 M BP
C416	87-010-529-080		CAP,E 1-50 M BP
C417	87-016-582-080		CAP,E 47-25 M SSL
C419	87-016-583-080		CAP,E 100-25 M SSL
C420	87-016-587-080		CAP,E 1000-25 M SSL
C421	87-016-576-080		CAP,E 330-16 M SSL
C422	87-016-576-080		CAP,E 330-16 M SSL
C451	87-016-634-080		CAP,E 2.2-50 M SSL

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C452	87-016-583-080		CAP,E 100-25 M SSL
C453	87-016-633-080		CAP,E 1-50 M SSL
C454	87-016-637-080		CAP,E 10-50 M SSL
C456	87-016-637-080		CAP,E 10-50 M SSL
C457	87-016-633-080		CAP,E 1-50 M SSL
C458	87-016-637-080		CAP,E 10-50 M SSL
C459	87-016-637-080		CAP,E 10-50 M SSL
C460	87-016-622-080		CAP,E 470-10 M SSL
C461	87-016-637-080		CAP,E 10-50 M SSL
C462	87-016-637-080		CAP,E 10-50 M SSL
C465	87-016-574-087		CAP,E 100-16 M SSL
C501	87-018-127-080		CAP,TC U 470P-50 K B UP050
C502	87-018-134-080		CAP,TC U 0.01-16 N Y UP050
C503	87-016-637-080		CAP,E 10-50 M SSL
C507	87-018-118-080		CAP,TC U 82P-50 K B UP050
C508	87-018-131-0280		CAP,TC U 1000P-50 K B UP050
C509	87-016-641-080		CAP,E 100-50 M SSL
C510	87-016-592-080		CAP,E 220-35 M SSL
C513	87-016-587-080		CAP,E 1000-25 M SSL
C514	87-016-633-080		CAP,E 1-50 M SSL
C603	87-010-976-080		CAP,CER 1000P-500 KB DD10
C605	87-016-481-010		CAP,PP 0.47-200 J
C606	87-016-490-010		CAP,M/P 8200P-1.25K PH
C607	87-012-399-010		CAP,CER 1500P-2K K BN DE
⚠ C800	87-A11-055-010		CAP,CER 100P-4K KB KX
⚠ C801	87-A10-223-010		CAP,M/P 0.22-250 K
⚠ C802	87-A10-223-010		CAP,M/P 0.22-250 K
C806	87-A10-176-010		CAP,TC-U 1000P-50 K B
C807	87-016-637-080		CAP,E 10-50 M SSL
C808	87-016-647-060		CAP,E 47-160 SSL
C809	87-016-515-080		CAP,CER 1000P-1 K B DE
⚠ C810	87-A11-044-090		CAP,E 180-450 M SMH
C811	87-016-583-080		CAP,E 330-16 M SSL
⚠ C812	87-A10-519-010		CAP,CER 4700P-4K M E KX
C813	87-A10-469-080		CAP,CER 2200P-500KB
C818	87-016-572-080		CAP,E 470-6.3 M SSL
C820	87-010-976-080		CAP,CER 1000P-500 K B DD10
⚠ C821	87-016-588-080		CAP,E 2200-25 M SSL
C825	87-016-586-080		CAP,E 470-25 M SSL
C830	87-012-386-010		CAP,CER 470P-2K K BN DE
C831	87-016-599-080		CAP,E 10-250 M SSL
C832	87-016-594-080		CAP,E 1000-35 M SSL
C833	87-016-515-080		CAP,CER 1000P-1K K B DE
C835	87-016-584-080		CAP,E 220-25 M SSL
C837	87-016-637-080		CAP,E 10-50 M SSL
C838	87-A10-832-010		CAP,CER 1000P-1K K R LONG
C839	87-016-637-080		CAP,E 10-50 M SSL
⚠ C840	87-016-649-090		CAP,E 220-160 M SSL
CF203	87-A90-223-080		FLTR, SFSH6.0MCB
CF205	87-008-578-080		FLTR,TPS6.5MB2
CF206	87-008-577-080		FLTR,TPS5.5MB2
CN301	84-LB2-631-010		CONN ASSY,5P TN-4
CN801	84-LB2-630-110		CONN ASSY,4P TN-3
D5	87-070-110-010		LED,SLP-181B-51 RED
DL301	87-A90-823-010		DELAY LINE,YTS-8B
DL302	87-A90-370-010		DELAY LINE,ELB10Z334
⚠ F801	87-035-458-010		FUSE,4A 250V T 218
FB601	87-003-223-080		F-BEAD,-3.4-7.5 BL02RN2
FB801	87-003-223-080		F-BEAD,-3.4-7.5 BL02RN2
FB802	87-003-223-080		F-BEAD,-3.4-7.5 BL02RN2
⚠ FC801	87-033-213-080		FUSE CLAMP,PFC5000
⚠ FC802	87-033-213-080		FUSE CLAMP,PFC5000
J401	87-A60-322-010		JACK,PIN 3P Y-W-R W/SW
J402	87-A60-324-010		JACK,PIN 6P Y-W-R W/SW
J403	87-009-216-010		JACK,3.5 BLK ST W/SW
L1	87-003-152-080		COIL, 100UH
L101	87-005-481-080		COIL,47UH J FLR50
L206	87-003-144-080		COIL,6.8UH K LAL02
L207	87-003-102-080		COIL,10UH K LAL02
L210	86-LB7-655-010		COIL,VCO 38.0MHZ LA7565N

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
L221	87-003-102-080		COIL,10UH K LAL02
L301	84-LB3-668-010		FLTR,SECAM DET
L302	84-LB3-668-010		FLTR,SECAM DET
L303	82-JT2-608-010		FLTR,DL PHASE
L304	87-003-145-080		COIL,8.2UH K LAL02
L305	82-JT2-611-010		FLTR, SECAM REF
L306	87-003-286-080		COIL,56UH K LAL02
L308	87-003-147-080		COIL,22UH K LAL02
L309	87-003-286-080		COIL,56UH K LAL02
L310	87-005-473-080		COIL,10UH J FLR50
L601	84-LB3-635-010		COIL,WLH-600LIN
L801	87-005-770-080		COIL, 47UH K #7607
L803	84-LB2-623-010		DGC,20PAL3
⚠ LF802	87-A91-055-010		FLTR,LINE SS24H-K121
PN401	87-049-469-010		CONN,4P V
PN601	87-099-675-010		CONN,5P V V
⚠ PN801	82-481-649-010		CONN,2P V TV-50P
⚠ PN802	87-099-674-010		CONN,2P VA V
⚠ PS802	87-A30-096-010		P-TR,TLP721F
⚠ PT801	86-LB4-655-010		PT,KER S/W TRANS('20')
R102	87-A00-164-090		RES,M/F 12K-2W J RSF(S)
R326	87-A00-067-090		RES,M/F 6.8K-3W J
R405	87-A00-267-090		RES,M/F 1.0-2W J RSF(S)
R412	87-025-597-090		RES,M/F 220-1W J
R413	87-025-597-090		RES,M/F 220-1W J
R608	87-025-598-010		RES,CEM 2.2K-5W J
R616	87-A00-049-060		RES,FUSE 2.2K-1/2W J R-TYPE
R620	87-025-585-010		RES,CEM 2.7-5W J
R801	87-022-500-010		RES,CEM 2.2-10W K
R802	87-A00-170-090		RES,M/F 82K-3W J RSF(S)
R806	87-A00-208-090		RES,M/F 22-1/2W
⚠ R809	87-029-160-060		RES,FUSE 2.2-1W J
R811	87-A00-216-090		RES,M/F 0.33-2W J RSF(S)
R812	87-A00-224-090		RES,SD 8.2M-1W J CE
⚠ R818	87-A00-282-090		RES,FUSE 5.6-1W J CE
⚠ R821	87-029-170-060		RES,FUSE 3.9-1W J
SFR1	87-024-177-080		SFR,220K H RH0638C
SFR2	87-024-357-080		SFR,100K DIA6 H
SFR201	87-024-354-080		SFR,22K DIA6 H
SFR301	87-024-349-080		SFR,1K DIA6 H
SFR302	87-024-349-080		SFR,1K DIA6 H
SFR501	87-024-356-080		SFR,47K DIA6 H
SP401	86-LBT-621-010		SPKR,F 45 8OHM 5W
SP402	86-LBT-621-010		SPKR,F 45 8OHM 5W
SW2	87-A90-712-080		SW,TACT EVQ11L07K
SW3	87-A90-712-080		SW,TACT EVQ11L07K
SW4	87-A90-712-080		SW,TACT EVQ11L07K
SW5	87-A90-712-080		SW,TACT EVQ11L07K
SW6	87-A90-712-080		SW,TACT EVQ11L07K
SW7	87-A90-712-080		SW,TACT EVQ11L07K
⚠ SW801	87-A90-364-010		SW,PUSH SDDLB1-C-D-2
T601	84-LB3-651-010		TRANS,HD MS-101N
⚠ T602	84-LB2-606-010		FBT, HFL1530G
⚠ TH801	87-A90-759-010		POS-THMS,PH451C272BF300N270
⚠ TU101	86-LB7-653-010		TU UNIT, BT-AH458
X1	87-030-212-080		VIB,CER 8.000MHZ CST
X201	87-A70-043-010		VIB,CER 503KHZ CSBE5
X301	87-A70-054-080		VIB,XTAL 4.43MHZ AQC-1018
X302	87-030-327-010		VIB,CER 503.500KHZ CSB F30
X303	87-A70-007-080		VIB,XTAL 3.58MHZ AQC-1001

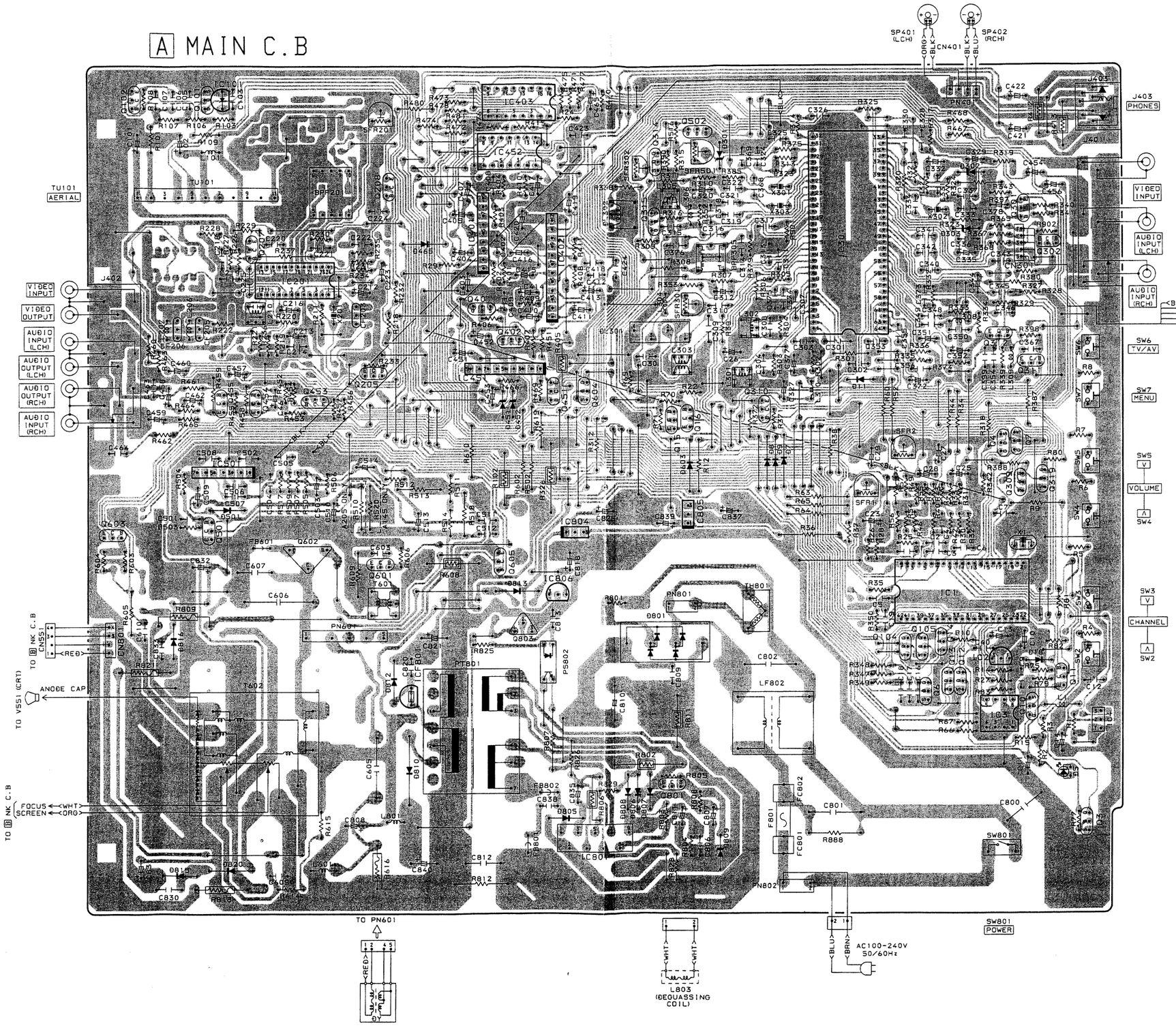
NK C.B

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
C551	87-010-976-080		CAP,CER 1000P-500 K B DD10
C552	87-012-097-010		CAP,CER 1000P-2K K BN DE
C553	87-018-125-080		CAP,TC U 330P-50 K B UP050
C554	87-018-125-080		CAP,TC U 330P-50 K B UP050
C555	87-018-125-080		CAP,TC U 330P-50 K B UP050
CN551	87-049-469-010		CONN,4P V
CN552	87-049-590-010		CONN,5P 8283 V WHT

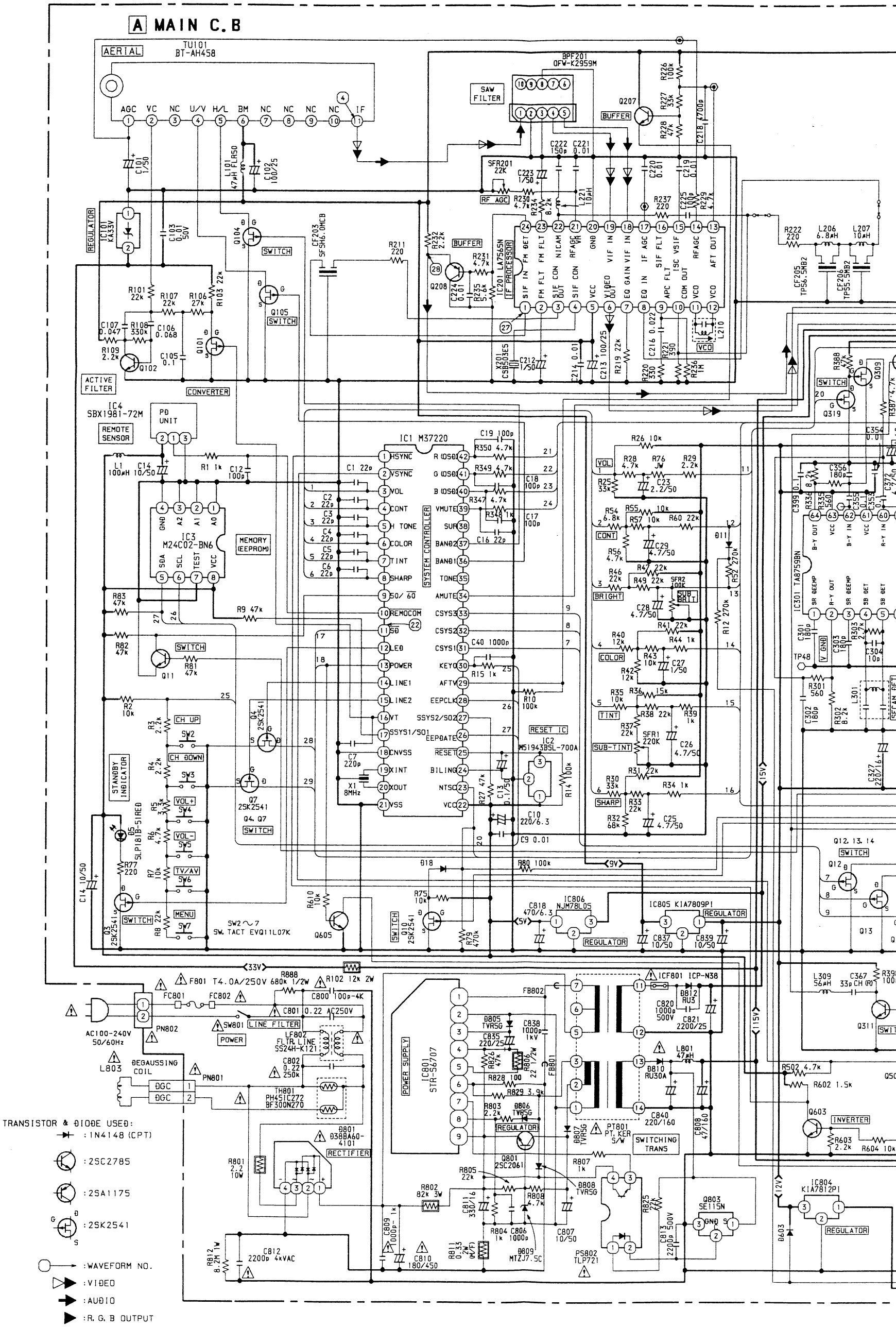
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
CN554	86-LBU-670-010		SOCKET,CRT 9P CVT3326 1603
L551	87-005-490-080		COIL,270UH J FLR50
R551	87-A00-041-090		RES,M/F 12K-2W J L-FORMING
R552	87-A00-041-090		RES,M/F 12K-2W J L-FORMING
R553	87-A00-041-090		RES,M/F 12K-2W J L-FORMING
SFR551	87-024-522-080		SFR,4.7K V RH063LC
SFR552	87-024-522-080		SFR,4.7K V RH063LC
SFR553	87-024-522-080		SFR,4.7K V RH063LC
SFR554	87-024-519-080		SFR,470 V RH063LC
SFR555	87-024-519-080		SFR,470 V RH063LC

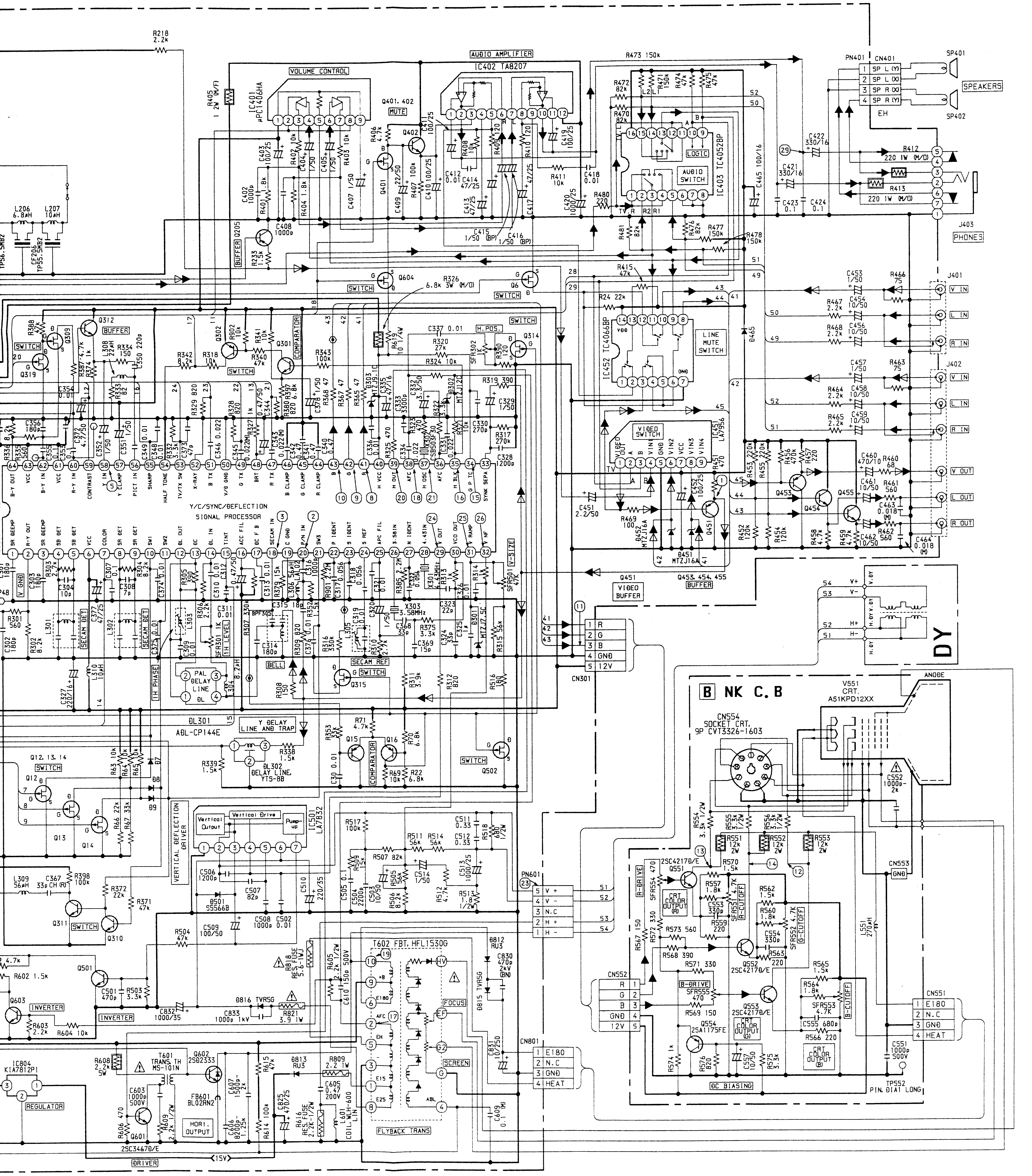
WIRING – 1 (MAIN)

A MAIN C.B

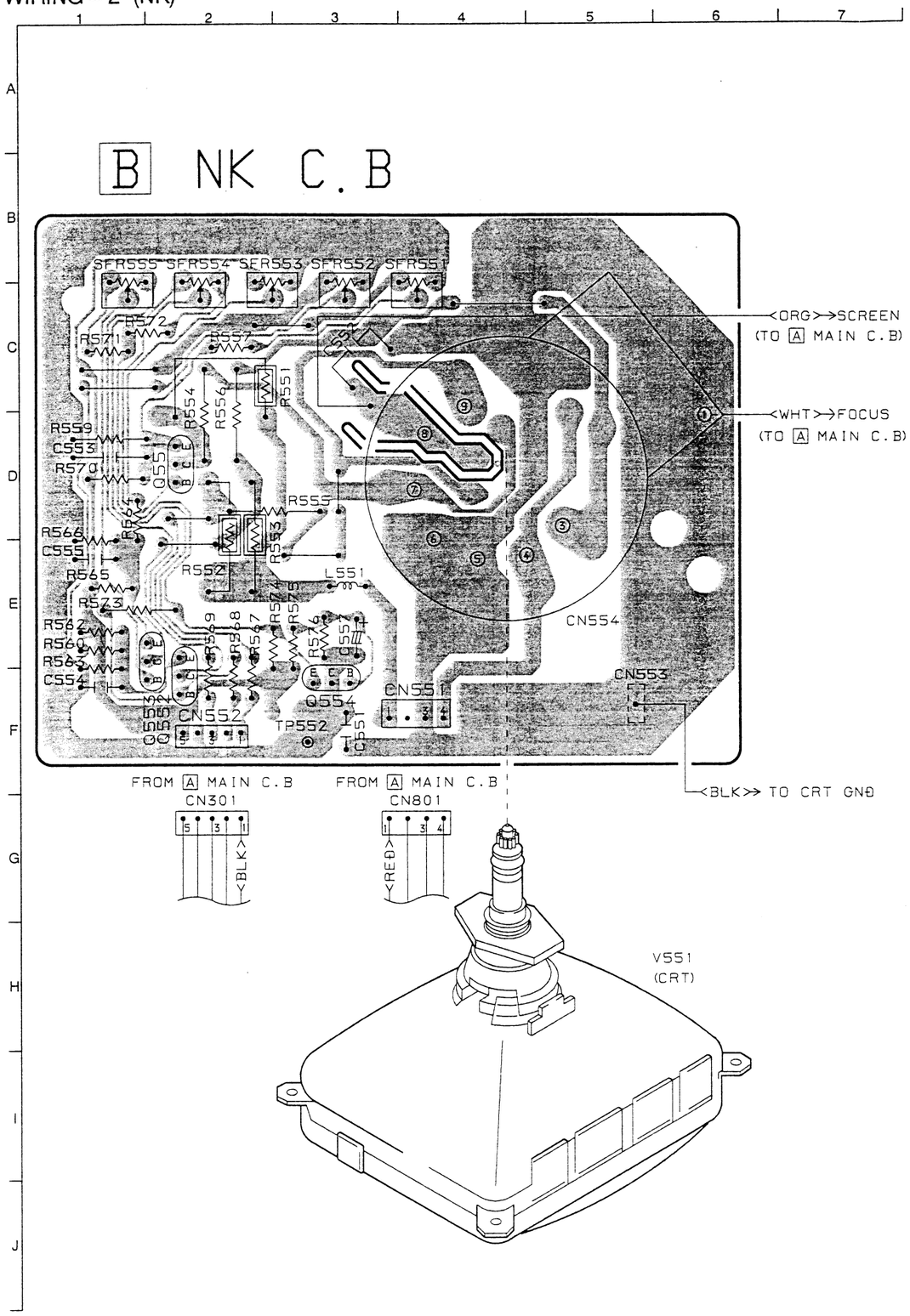


SCHEMATIC DIAGRAM (MAIN / NK)

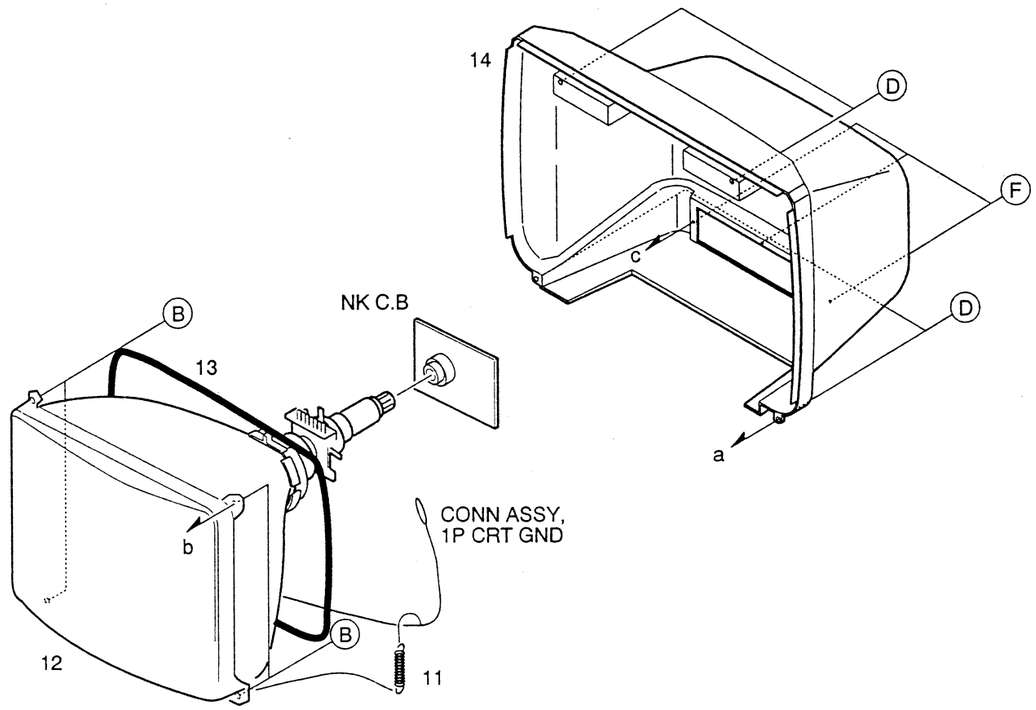


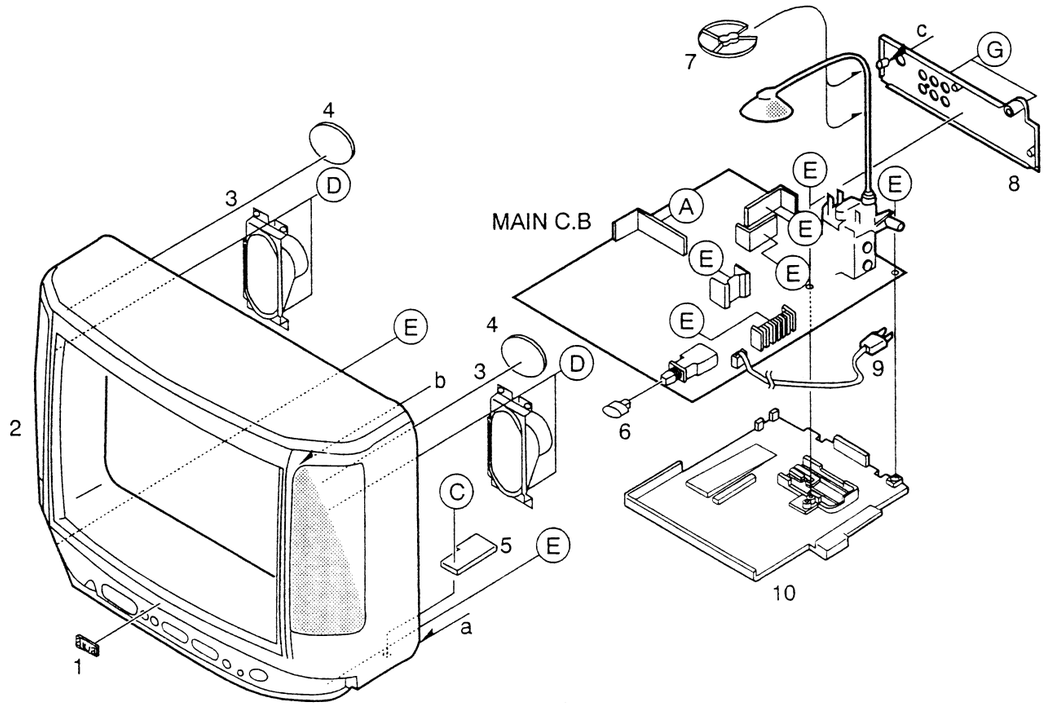

AUDIO AMPLIFIER
IC402 TA8207
VOLUME CONTROL
IC401 μPC1406HA
Q401, 402
MUTE
BUFFER Q205
SWITCH
Q604
Q6
R326 6.8k 3W (M/O)
R473 150k
IC403 TC4052BP
LOGIC
AUDIO SWITCH
PN401
CN401
SP L (Y)
SP L (X)
SP R (X)
SP R (Y)
EH
SP401
SP402
SPEAKERS
J403
PHONES
IC452 TC4066BP
LINE MUTE SWITCH
IC451 LA7956
VIDEO SWITCH
J401
J402
V IN
L IN
R IN
V OUT
L OUT
R OUT
Q451
VIDEO BUFFER
Q453, 454, 455
BUFFER
Q312
BUFFER
Q309
Q319
Q302
Q301
COMPARATOR
H.POS.
Q314
Y/C/SYNC/DEFLECTION
SIGNAL PROCESSOR
V-SIZE
SECAM DET
1H LEVEL
1H PHASE
PAL DELAY LINE
BELL
SECAM REF
Q315
DL301
ADL-CP144E
Y DELAY LINE AND TRAP
DL302
DELAY LINE
YTS-8B
Q15
Q16
Q502
Q12, 13, 14
Q311
Q310
VERTICAL DEFLECTION DRIVER
IC501 LA7832
Vertical Output
Vertical Drive
Pump-up
CN301
R
G
B
GND
12V
DY
V+
V-
H+
H-
B NK C.B
V551
CRT.
A51KPD12XX
ANODE
CN554
SOCKET CRT.
9P CVT3326-1603
R-DRIVE
G-CUTOFF
R-CUTOFF
B-DRIVE
B-CUTOFF
CRT COLOR OUTPUT (R)
CRT COLOR OUTPUT (G)
CRT COLOR OUTPUT (B)
Q551
Q552
Q553
2SC4217D/E
Q554
2SA1175FE
DC BIASING
CN552
CN553
CN551
E180
N.C
HEAT
TP552
PIN. DIA1 LONG
PN601
V +
V -
H +
H -
CN801
Q501
Q603
INVERTER
IC804
KIA7812PI
REGULATOR
T601
TRANS. TH
MS-101N
Q602
2SD2333
FB601
BL02RN2
HORI. OUTPUT
Q601
2SC3467D/E
DRIVER
15V
T602 FBT. HFL1530G
FOCUS
SCREEN
FLYBACK TRANS

WIRING – 2 (NK)



MECHANICAL EXPLODED VIEW 1 / 1



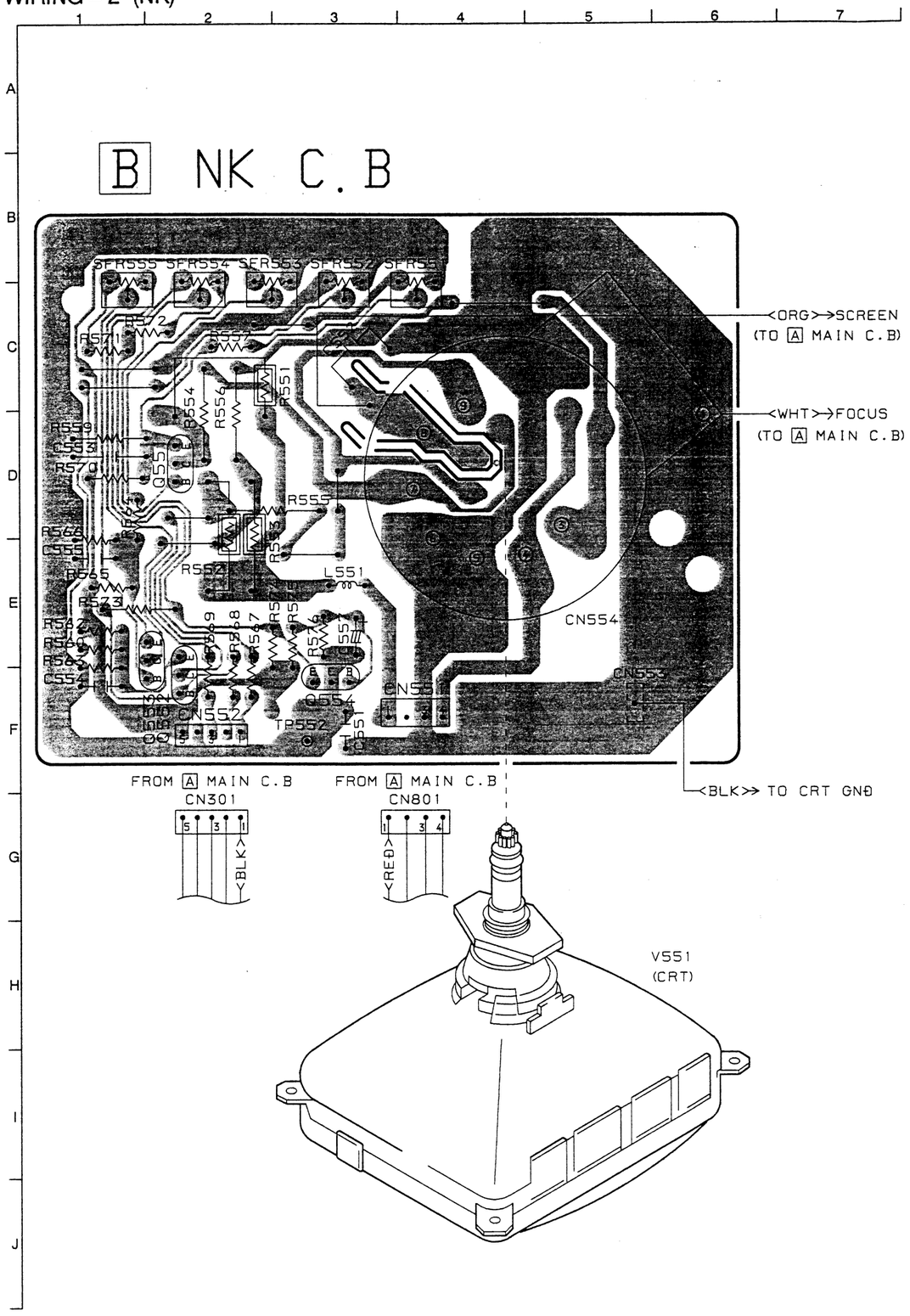


MECHANICA

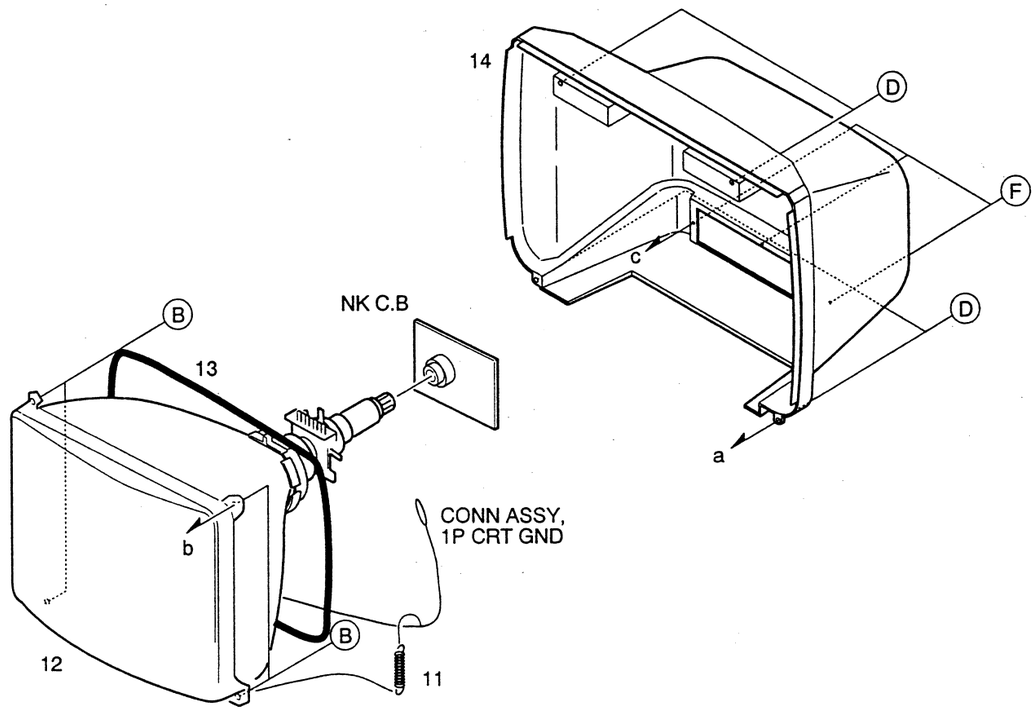
If can't understand

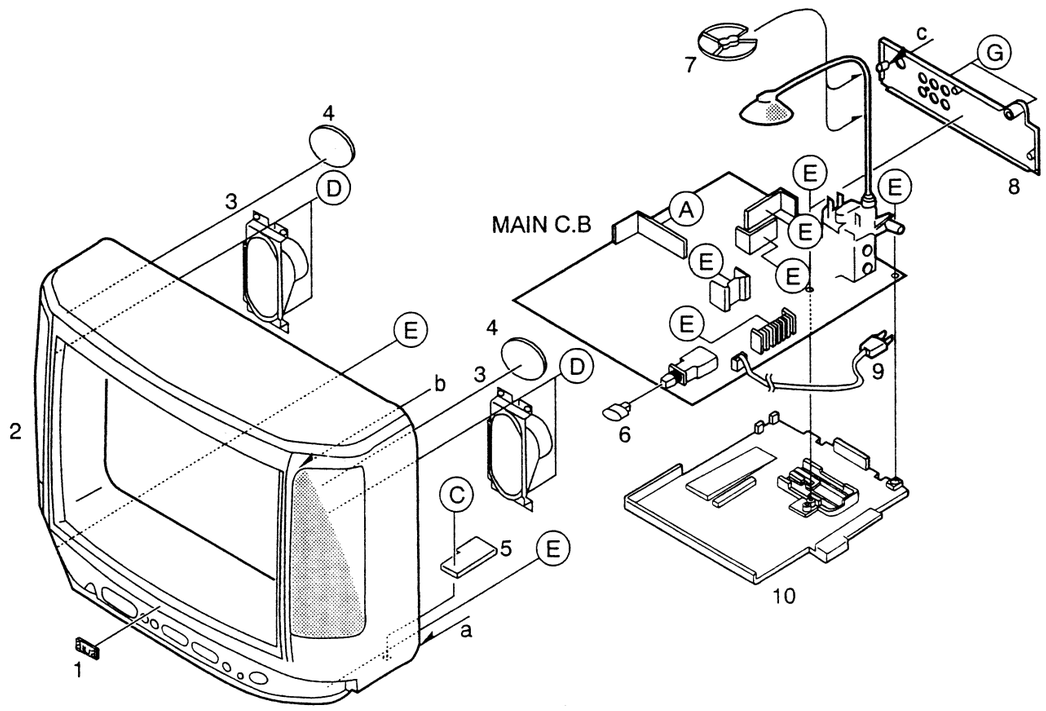
REF. NO.	PART NO.
1	87-054-(
2	86-LB2-(
3	86-LBT-(
4	86-LBN-(
5	86-LBU-2
6	86-LBB-(
7	87-A90-1
8	86-LBB-(
⚠ 9	87-A80-1
10	86-LBT-2
11	84-LB3-2
⚠ 12	88-JBJ-(
⚠ 13	84-LB2-(
14	86-LB3-(
A	87-067-(

WIRING – 2 (NK)



MECHANICAL EXPLODED VIEW 1 / 1





MECHANICA

If can't understand

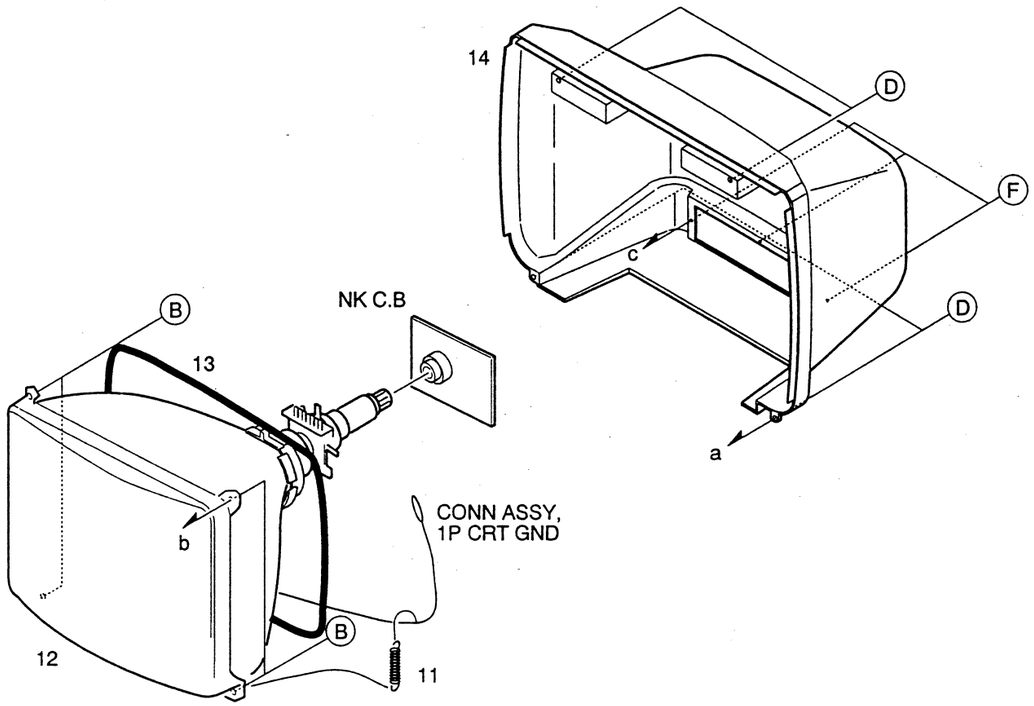
REF. NO.	PART NO.
1	87-054-(
2	86-LB2-(
3	86-LBT-6
4	86-LBN-(
5	86-LBU-2
6	86-LBB-(
7	87-A90-1
8	86-LBB-(
⚠ 9	87-A80-1
10	86-LBT-2
11	84-LB3-2
⚠ 12	88-JBJ-(
⚠ 13	84-LB2-(
14	86-LB3-(
A	87-067-5

-<ORG>->SCREEN
TO A MAIN C.B)

-<WHT>->FOCUS
TO A MAIN C.B)

TO CRT GND

MECHANICAL EXPLODED VIEW 1 / 1



MECHANICAL PARTS LIST 1 / 1

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	87-054-086-010		BADGE,AIWA 52.5 ABS GLD
2	86-LB2-025-110		CABI,FR ASSY KE EX
3	86-LBT-621-010		SPKR,F 45 8OHM 5W
4	86-LBN-009-010		PLATE,SPKR
5	86-LBU-201-010		HLDR,AC CORD
6	86-LBB-009-110		KEY,POWER
7	87-A90-332-010		HLDR,SF-2001 HV CABLE
8	86-LBB-010-010		PANEL,REAR
⚠ 9	87-A80-124-010		AC CORD ASSY,KE BLK W/FLTR T
10	86-LBT-208-110		HLDR FBT 2
11	84-LB3-205-010		SPR-E,EARTH
⚠ 12	88-JBJ-601-010		CRT,A51KPD12XX
⚠ 13	84-LB2-623-010		DGC,20PAL3
14	86-LB3-010-010		CABI,REAR EX
A	87-067-584-010		BVT2+3-6 W/O SLOT
B	86-LBB-206-010		S-SCREW,ASSY TV5-40 W20
C	87-067-758-010		BVT2+3-12 W/O SLOT
D	87-067-844-010		BVT2+4-16 BLK
E	87-067-680-010		BVIT3B+3-10
F	87-B10-071-010		BVT2+3-16 W/O SLOT
G	87-067-761-010		BVT2+3-10 BLK

ACCESSORIES / PACKAGE LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
3	86-LB3-610-010		ANT ASSY,TV5 SEC.(PAL)